

CORNELL
UNIVERSITY
LIBRARY



FROM

Mrs. V. M. Viegand

RETURN TO

Cornell University Library

QL 77.L8A2 1911

Official guide to the gardens of the Zoo



3 1924 003 401 985

mann



Cornell University
Library

The original of this book is in
the Cornell University Library.

There are no known copyright restrictions in
the United States on the use of the text.

<http://www.archive.org/details/cu31924003401985>

ILLUSTRATED
OFFICIAL GUIDE
TO THE LONDON
ZOOLOGICAL SOCIETY'S
GARDENS
IN REGENT'S PARK

PRICE

6^d

9th EDITION

BY P. CHALMERS
MITCHELL, F.R.S.,
SECRETARY TO THE
SOCIETY

THE ZOOLOGICAL
SOCIETY OF LONDON,
REGENTS PARK.
N.W.

C.J.F.

FENNINGS' THE SURE REMEDY

for Coughs, Colds,
Asthma, Bronchitis.

SOLD
EVERY-
WHERE.

LUNG HEALERS

In Boxes, 1/1½ & 2/9.

ACT : LIKE : A : CHARM

For Indigestion
And kindred ills,
The greatest remedy
Is _____

Holloway's Pills.

SIMPLE : SAFE : AND : SURE

Dr.

RIDGE'S FOOD

Is the BEST Nourishment for
Babies and Growing Children,
INVALIDS and DYSPEPTICS,
Nursing Mothers and the Aged.

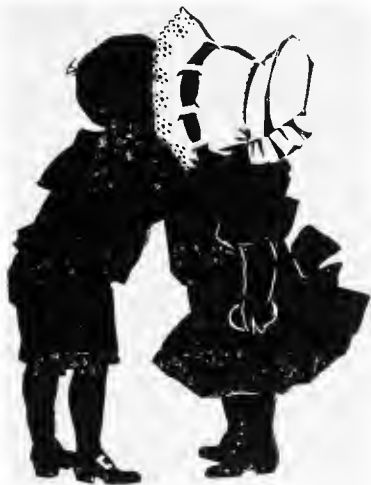
It is easily digested, nourish-
ing, sustaining, and delicious.

50 Years' reputation. Sold everywhere.

In tins, 8d., 1/-, 2/-, 4/- and 8/-

FREE. A free sample tin of Dr. RIDGE'S
FOOD will be sent to anyone
sending a postcard for same.

RIDGE'S ROYAL FOOD MILLS,
(Dept. G.Z.) London, N.



IT IS NOT A SECRET
that thousands of people learnt
their life-long habit of using

**WRIGHT'S
COAL TAR
SOAP**

when they were children.

THE ORIGINAL and ONLY GENUINE.

RIGOLLOT'S

MUSTARD LEAVES

(or MUSTARD PAPER)

FOR PLASTERS.

*ADOPTED BY THE PARIS HOSPITALS,
THE FRENCH ARMY AND NAVY, AND
THE BRITISH ARMY AND NAVY.*

**CLEANLY, EFFICIENT, ENERGETIC,
PORTABLE, SURE.**

*A Tin or Packet should be kept in every
home, ready for any emergency.*

SOLD BY ALL CHEMISTS AND DRUGGISTS.
WHOLESALE: 67, SOUTHWARK BRIDGE RD., S.E.

**GRAND PRIX,
LONDON, 1908.
BRUSSELS, 1910.**

***BEWARE of WORTHLESS &
DANGEROUS IMITATIONS.***

LIST OF HOUSES, ENCLOSURES, &c.

No. of House.	PAGE	No. of House.	PAGE
1. Western Aviary	4	35A. Waders' Aviary	73
1A. Western Goose Paddocks	9	36. Three-Island Pond	73
1B. Western Duck Pond	10	The King's African Collection	73
2. Polar Bears' Pond	11	37. Squirrels' Trees	74
3. Southern Aviary	12	38. Diving Birds' House	75
4. Swine-House	14	39. Refreshment Rooms	76
5. Rodents'-House	15	40. Eagles' Aviaries	77
6. Monkeys' Cages	17	Band Stand	77
7. Monkey-House	19	The Kiosk	77
8. Ape House	22	41. Civets' House	77
8A. Western Pheasantries	24	42. Cranes' Paddocks	79
9. Stork and Ostrich-House	24	42A. Mouse-House	82
10. Sea-Lions' Pond	27	43. Insect-House	83
10A. Park Paddocks	29	44. Owls' Aviary	84
11. Wolves' and Foxes' Dens	29	45. Northern Pheasantry	87
12. Lion-House	30	46. North Bank Yards and Aviaries	88
12A. Lion-House Paddocks	33	47. Lemur-House	89
13. Antelope-House and Paddocks	33	48. Mammals' Out-door Cages	92
14. Small Birds' House	36	49. Kangaroos' Shed and Paddock	94
15. Hyenas' and Bears' Dens	39	50. Offices and Library	95
16. Camel-House and Clock-Tower	41	51. Brush Turkeys' Enclosure	95
17. Great Aviary	42	52. Thars' House	96
18. Pelicans' Enclosure	44	53. Refreshment Bar	96
19. Eastern Aviary	44	54. Parrot-House	96
20. Fellows' Tea Pavilion	47	55. Elephant-House	101
20A. Pavilion Pond	47	56. Chamois' Yard	102
20B. Keepers' Lodges	47	56A. Canal Bank Aviary	102
21. Sheep-Yard	48	57. Deer-Sheds	103
22. Llama-House	48	58. Beaver Pond	104
23. Tunnel Pond	48	58A. Hyrax Cages	105
24. Otters' Pond	48	59. Superintendent's House	105
25. Crescent Aviary	49	59A. Deer Yard	105
26. Small Mammals' House	50	60. Hippopotamus-House	105
27. Foxes' and Jackals' Enclosures	53	61. Tapirs' House	106
28. Racoons' Cages	53	62. Giraffe-House	106
29. Birds of Prey Aviaries	54	63. Wild Asses' House	107
30. Infirmary and Laboratories	57	64. Zebra-House	109
31. Eastern Pheasantry	57	65. Gazelle-Sheds	110
32. Deer and Cattle-House	58	66. Exit	110
33. Reptile-House	64	Feeding Times of the Animals	110
34. Tortoise-House	70	Bath Chairs	111
35. Duck Ponds	72	Public Telephone	111

RONUK

SANITARY POLISH



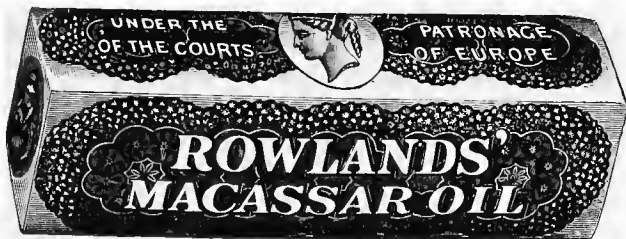
For
Furniture
Linoleum
Floors etc.

Highly Concentrated.



IN TINS
3°, 6°, 1/-, 2/-
EVERYWHERE.

“RONUK” LTD
PORTSLADE NR BRIGHTON.



ROWLAND'S FOR THE HAIR. MACASSAR

OIL
Preserves, Beautifies, Restores, and **strengthens** the hair and prevents it falling off or turning grey. Especially suited for **ladies' and children's hair**. It closely resembles the **natural oil** in the hair, which Nature provides for its preservation; without which the hair becomes dry, thin and withered, and then baldness follows. **Golden Colour** for fair hair. Avoid cheap worthless imitations under the same or similar name which have no Restorative properties and do not contain that delightful Perfume—Otto of Roses—for which Rowland's Macassar Oil has been so long famous. Sizes 3s. 6d., 7s., 10s. 6d. (equal to 4 small), and 21s. Of stores, chemists, hairdressers, and Rowland's, 67, Hatton Garden, London.

WATKINS & DONCASTER, NATURALISTS,

36, STRAND, LONDON, W.C.
(Five doors from Charing Cross)

Keep in Stock every description
of Apparatus, Cabinets,
Books, and Specimens for
Collectors of

Birds' Eggs, Butterflies &
Moths, &c., &c.

Birds, Animals, Fishes, &c., stuffed
and mounted in natural positions.

*Catalogue (100 pp.) sent post free
on application.*

Clarke's Blood Mixture

BY reason of its remarkable Blood Purifying Properties, can be relied upon to effect a permanent cure in all cases of disease due to impure blood, such as Eczema, Scrofula, Glandular Swellings, Bad Legs, Abscesses, Boils, Sores and Eruptions of all kinds, Blood Poison, Rheumatism, &c. Over 50 years' success. Thousands of testimonials. Pleasant to take. Guaranteed harmless to the most delicate constitution of either sex from infancy to old age.

CURES all SKIN & BLOOD DISEASES.

Of all Chemists, 2/9 per bottle.

Over One Hundred and Twenty Years' Reputation.

NORTON'S

CAMOMILE PILLS.

For INDIGESTION. A SAFE Household Remedy :
NORTON'S CAMOMILE PILLS. 120 years' unequalled
reputation. The best remedy for Indigestion, Head-
ache, Dyspepsia, Biliousness, Constipation, Stomach
and Liver Complaints. Try them and prove for
yourself. The cost is small. The benefit great.

*Bottles 1s. 1½d. and 2s. 9d., sold all over the World,
or Norton's, Ltd., 21, Spital Square, London.*

DINNEFORD'S



MAGNESIA

Is the best remedy for
ACIDITY OF THE STOMACH,
HEARTBURN, HEADACHE,
GOUT and INDIGESTION.

Safest Aperient for
DELICATE CONSTITUTIONS, LADIES, CHILDREN,
AND INFANTS.

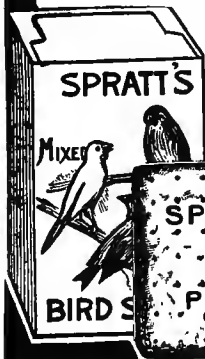
NOTHING
BETTER
THAN
THE **BEST**



THEREFORE ALWAYS ORDER

SPRATT'S
MEAT "FIBRINE" DOG CAKES
AND
PUPPY BISCUITS

Bird Seeds & Parrot Food



"LAYMOR"
MAKES HENS LAY & KEEPS THEM AT IT.

You can obtain these foods locally, but be sure you are supplied with "Spratt's" and not inferior substitutes said to be "just as good."

Booklets & Samples free of SPRATT'S Patent Ltd
24 & 25, Fenchurch Street, London, E.C.

The Young of all Mammals should be weaned on

LACTOL

on which they can also be safely reared by hand from birth. It is an invaluable food also for sick animals, as they will often take it readily when all else is refused. For these purposes it is largely used **IN THE ZOOLOGICAL SOCIETY'S GARDENS** and in various menageries; whilst there are few Kennels of importance in which the pups are not brought up on it.

IN TINS 1/-, 2/6 & 5/-.

Of leading Stores and Chemists, or from the Manufacturers:—

A. F. SHERLEY & Co., 46 & 48 Borough High St., S.E.

Do your DYEING AT HOME.—

Home Dyeing has been rendered the most simple process possible by the introduction of the beautiful **Maypole Soap Dyes**, which entirely supersede the old-fashioned powder dyes. The result obtained is a brilliant fast dye in any shade you wish. Colours, 2d. and 4d. per cake. Black, 6d.

Our Booklet, "The Perfection of Home Dyeing," and Amusing Novelties for Children, sent post free on application to "C 6" Dept., THE MAYPOLE CO. (1899) Ltd., 17, Cumming Street, London, N.

MAYPOLE 1d FAST DYES IN 12 BRILLIANT COLOURS.

TELEPHONES—1729 P. HAMPSTEAD; 1368 VICTORIA. TELEGRAMS—"SHANLYITE, LONDON."

M. W. SHANLY,

33, KING HENRY'S ROAD, SOUTH HAMPSTEAD, N.W.

SOLE LICENSEE FOR VINGENT'S PATENT BATH CHAIRS.

Bath Chairs for Sale or Hire. Sent to any address, town or country, on receipt of order by post, 'phone or wire.

Orders can also be given to Attendants inside the Gardens.

For terms of purchase apply as above. Chairs can be hired by the Day, Week, Month, or for longer periods.



England's Finest Vintage

SYMONS' DEVONSHIRE CYDER

HAS NO EQUAL. See
Analyst's Report.

SPECIAL BRANDS—

IMPERIAL AND
'APPLE & BLOSSOM.'

'SYMONIA'

Brand for Export, which is
specially prepared for Ex-
portation to Hot Climates.

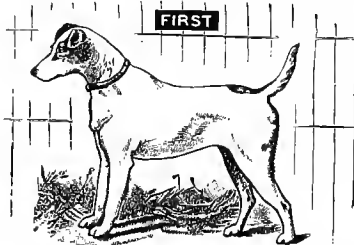
Supplied in Bottles and Casks
of assorted sizes.

JNO. SYMONS & Co., Ltd.,

Fruit Mills, Totnes, DEVON; & Ratcliff,
[LONDON, E.
Telephone: 3545 EAST.

NALDIRE'S PRIZE MEDAL DOG SOAP

(Free from carbolic acid and all other poisons).



(COPYRIGHT.)

I'm FIRST, for I was washed with NALDIRE'S SOAP.

IT DESTROYS INSECTS, IMPROVES THE COAT, AND
LEAVES THE ANIMAL REFRESHED AND HAPPY.

NALDIRE'S Prize Medal SOAP

Is sold in 6d. and 1s. Tablets by all
Chemists and Stores.



EST. A CENTURY.



ROBB'S CELEBRATED NURSERY BISCUITS AND FOODS

For INFANTS, INVALIDS,
and THE AGED.

To be obtained of all Grocers, Bakers, etc.

Send for Descriptive Booklet, etc.,

ALEX. ROBB & CO.,

79, St. MARTIN'S LANE, W.C.

BY APPOINTMENT TO

H.M. The KING of SPAIN.

'PHONE: GERRARD 4991.



DELICIOUS COFFEE

RED WHITE & BLUE

For Breakfast & after Dinner.

In making, use less quantity. It being so
much stronger than ordinary COFFEE.

**A LAXATIVE, REFRESHING
FRUIT LOZENGE,
VERY AGREEABLE TO TAKE.**

**GOLD MEDAL,
LONDON, 1908.**

**TAMAR
INDIEN
GRILLON**

FOR

CONSTIPATION,

**Hæmorrhoids, Bile, Loss of Appetite, Gastric
and Intestinal Troubles, Headache.**

67, SOUTHWARK BRIDGE ROAD, BORO', LONDON.

SOLD BY ALL CHEMISTS and DRUGGISTS.
2s. 6d. A BOX.

ROYAL SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS

Patrons :

HIS MAJESTY KING GEORGE V. HER MAJESTY QUEEN MARY.
HER MAJESTY QUEEN ALEXANDRA.

President : H.S.H. THE DUKE OF TECK, G.C.V.O.

Chairman : COLONEL SIR EDWARD WARD, K.C.B., K.C.V.O.

SOME BRIEF PARTICULARS OF THE SOCIETY.

A. The Society was founded in 1824.

B. Its methods of procedure are Punitive, Persuasive and Educational.

C. Since the year 1837 it has registered upwards of 240,000 convictions, but the total should be multiplied tenfold if the cautions given by the Society are reckoned. Over 170 Inspectors are constantly employed in England and Wales alone, in which the Society has 680 branches and auxiliaries.

D. The Society holds Annual Essay Competitions on the duty of kindness to animals in the schools of the metropolis and in the country. It has over 500 Bands of Mercy for children and young people, and is constantly increasing this work by means of gratis Lectures and Public Addresses. It invites the clergy to preach sermons on Kindness to Animals on the 4th Sunday after Trinity. It publishes the *Animal World* and *Band of Mercy* monthly, besides issuing close on 200 pamphlets and leaflets inculcating the duty of kindness to the dumb creation. It is

SUPPORTED ONLY BY VOLUNTARY CONTRIBUTIONS.

and the Council need every assistance to enable them to continue and increase their humane work, which is both educational and punitive.

The increased operations of the Society have drawn from the funds an amount vastly exceeding the yearly subscriptions. The Council therefore need much greater assistance, and unless such additional support be extended to them this most righteous cause of humanity must suffer.

EDWARD G. FAIRHOLME, *Secretary*,

105, JERMYN STREET, LONDON, S.W.

THE ANIMAL WORLD.

New Series. Illustrated. Price 2d. Monthly.

The Animal World, the official organ of the R.S.P.C.A., is issued in a specially designed and coloured pictorial cover, and is profusely illustrated by photographs direct from Nature, which are produced and printed with the greatest care. Among its recent contributors are many of the best known writers on Natural History and other subjects, and the new and attractive features include **A Natural History Identification Competition, A Monthly Photographic Competition.** Annual Subscription, 2/6 post free, on sale at all bookstalls.

"THE ANIMAL WORLD" Office, 105 Jermyn St., London, S.W.

A Natural Remedy

Time was when disease was thought to be due to the direct influence of evil spirits, and exorcism and magic were invoked to cast it out.

Science has taught us wisdom. The evil spirits exist still. We call them "Disease Germs," and they also must be cast out. Once lodged in the stomach or intestines, fever with its hallucinations, or biliousness with its aches and pains, is the result.

Eno's 'Fruit Salt'

is the approved remedy for driving out disease germs. Its action is quick and thorough. It clears the intestines, rouses the torpid liver to new life, stimulates the mucous membrane to a healthy action, and cleanses and invigorates the whole digestive tract.

It may be safely taken at any time by old or young.

It is very effective in the early stages of Diarrhoea by removing the irritating cause.

Be prepared for emergencies by always keeping a bottle in the house.

Prepared only by

J. C. ENO, Ltd., 'FRUIT SALT' WORKS, LONDON, S.E.

Missing Page

Missing Page

Official Guide

to the

Gardens of the Zoological Society of London.

BY

P. CHALMERS MITCHELL,

M.A., D.Sc., HON. LL.D., F.R.S., F.L.S., F.Z.S., SECRETARY TO THE SOCIETY;
HONORARY MEMBER OF THE ROYAL ZOOLOGICAL SOCIETY OF IRELAND;
CORRESPONDING MEMBER OF THE ACADEMY OF NATURAL SCIENCES
OF PHILADELPHIA.

NINTH EDITION.

WITH

50 ILLUSTRATIONS IN THE TEXT FROM PHOTOGRAPHS OF ANIMALS
NOW OR RECENTLY LIVING IN THE GARDENS, TAKEN BY
W. S. BERRIDGE, F.Z.S., W. P. DANDO, F.Z.S.,
AND HENRY IRVING.

*With a Plan of the Gardens, and a Map showing
Railway and Omnibus Routes.*

LONDON :
OFFICES OF THE ZOOLOGICAL SOCIETY OF LONDON,
AT THE SOCIETY'S GARDENS IN THE REGENT'S PARK.

1911.

B

' c

111

NINTH EDITION, REVISED.

With 50 Illustrations.

Figures 1, 2, 4, 5, 6, 7, 8, 9, 13, 16, 17, 18, 21, 22, 24, 25, 26, 27, 28, 30, 31, 33, 35, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, are from Photographs by W. S. BERRIDGE, F.Z.S.

Figures 3, 10, 11, 12, 14, 15, 20, 32, 34, 36, are from Photographs by W. P. DANDO, F.Z.S.

Figures 19, 23, 29, 40, are from Photographs by HENRY IRVING.

This Guide is the only Official Guide to the Gardens, and the arrangement of each edition will correspond as closely as possible with the existing arrangement of the Houses and Animals. The Index on page 112, and the List of Houses in the Advertisement pages, will be found useful. The Copyright belongs to the Zoological Society of London, and the Guide is sold at the Gardens at the price of Sixpence. It may be obtained at the Office, Regent's Park, Sevenpence-halfpenny, post free.



ZOOLOGICAL SOCIETY OF LONDON.

FELLOWSHIP OF THE SOCIETY.

Any Lady or Gentleman is eligible for election to the Society. Admission Fee £5 ; Annual Subscription £3, or life composition of £45 in lieu thereof.

Fellows have personal admission to the Gardens with two companions daily, and the wife or husband of a Fellow may use this privilege in the absence of the Fellow.

Fellows may receive each year 60 undated green tickets, each admitting one adult on a Sunday or Week-day ; each green ticket may be exchanged for two children's tickets ; or they may receive instead of 20 green tickets a book of dated Sunday Orders, each Order admitting two persons ; and instead of 20 green tickets a similar book of Saturday Orders, these Orders being valid only for the dates printed on them.

Fellows have the right of using the Library and attending the Meetings of the Society.

For full particulars apply to the Secretary.

Guide to the Gardens of the Zoological Society of London.



THESE Gardens, which belong to a Society incorporated by Royal Charter in 1829 under the name of the ZOOLOGICAL SOCIETY OF LONDON, with the objects of "advancing the science of Zoology," and of introducing "new and curious subjects of the Animal Kingdom," were first opened to the public on April 27, 1828. The Society now consists of about 4,350 Fellows, and 25 Foreign and 200 Corresponding members. It is governed by a Council elected annually. The Patron of the Society is His Majesty the King, who has been a Fellow since 1894. The President is H.G. the Duke of Bedford, K.G. The Secretary and chief Executive Officer is Dr. P. Chalmers Mitchell, F.R.S. The privileges of Fellows and conditions of election are stated on page 2 of this Guide. The Offices and Library of the Society, where Scientific Meetings are held from November to June, and where the Scientific Publications of the Society are issued, are at the Gardens, No. 50 on the Plan. The Gardens occupy an area of about 34 acres in Regent's Park, and are held from the Crown, through the Office of Woods, and from H.M. Commissioners of Works, at an annual rent. Mr. R. L. Pocock, F.R.S., is Curator of Mammals and Reptiles and resident Superintendent; Mr. D. Seth-Smith is Curator of Birds and Inspector of Works. They are assisted by a staff consisting of an assistant-superintendent, twelve sectional head-keepers who can be recognized by gold-lace bands on their caps, a head gardener, a foreman of the works, a storekeeper, and over a hundred keepers, gardeners and labourers. There is a Prosectorium (not open to the Public) where the causes of death of animals in the collection are enquired into, and where scientific investigations are made on the bodies of dead animals; this is directed by Mr. F. E. Beddard, F.R.S., the Society's Prosector, with the aid of Mr. H. G. Plimmer, F.R.S., the Society's Pathologist. The Gardens are open from 9 a.m. till sunset. The charge for admission is One Shilling for Adults and Sixpence for Children; on Mondays throughout the year and on several advertised days at the holiday seasons, Sixpence for everyone. On Sundays the Gardens are closed, except to Fellows and their friends and those provided with special tickets.

The Gardens are divided by the "Outer Circle" and the "Regent's Canal" into three portions, called respectively the South Garden, the Middle Garden, and the North Garden. These are connected by a tunnel under the "Outer Circle" and two bridges over the Canal. There are three entrances to the Gardens. The NORTH ENTRANCE in the North Garden, between numbers 41 and 43 on the Plan, is in the Albert Road, and is 873 yards from Chalk Farm Station; a motor omnibus ("Zoo Special") runs every weekday between this gate and Oxford Circus, leaving the Circus each hour and half-hour from ten until five, and leaving the Gardens at 10.15, 10.45 and so on until 5.15 p.m., fare One Penny each way. The SOUTH ENTRANCE (in the South Garden, between numbers 29 and 31 on the Plan) leads from the Broad Walk in Regent's Park and is 1,570 yards from Portland Road Station, about 300 yards from the Camden Town and South London Omnibus Routes, and less than half a mile across the Park from the Regent's Park Station on the Waterloo and Baker Street Tube Railway. The MAIN ENTRANCE (in the South Garden, near number 1 on the Plan) communicates with the "Outer Circle" of Regent's Park and is 1,460 yards from St. John's Wood Station, 1,480 yards from Chalk Farm Station, 2,170 yards from Portland Road Station; it is the chief entrance for those who drive to the Gardens. The Railway and Omnibus Map, on the reverse of the Plan of the Gardens, shows the means of access to these Entrances from the various parts of London. The order of the descriptions in this Guide is shown by a dotted line on the Plan.

Starting from the MAIN ENTRANCE the visitor, by following the path to the right, will reach

1. THE WESTERN AVIARY.

This aviary is heated in winter, and is adapted for hardy tropical and semi-tropical birds, such as BOWER-BIRDS, LAUGHING KINGFISHERS, and WOOD-SWALLOWS from Australia; CROWNED PIGEONS from New Guinea; DRONGOS, BULBULS, and SAND GROUSE from the Oriental region; TOURACOUS, WEAVER-BIRDS and WHYDAH-BIRDS from Africa; BLUE-BIRDS, VIRGINIAN and CALIFORNIAN QUAILS from North America; TINAMOUS and CAYENNE LAPWINGS from South America; CARDINALS and COW-BIRDS from North and South America; DOVES and PIGEONS from many parts of the world.

The Silky Bower-bird (*Ptilorhynchus violaceus*).

The Bower-birds and the gorgeous Birds of Paradise are near relatives of the Crows, but whilst the Birds of Paradise are distinguished by magnificent plumage, the habits of the Bower-birds make them interesting to the naturalist. Before pairing, these birds construct bowers of arched twigs, sometimes several feet high, on clear spaces, decorated

with moss or creepers, or bright flowers, or any highly-coloured objects. The decorations are renewed frequently, the withered ornaments being cast aside. In these playgrounds the males perform elaborate antics. The males and females usually differ in colour, and the young resemble the females. The Bower-birds in the Gardens make some attempt at carrying out their curious habits nearly every summer.

Great Billed Touracou (*Turacus macrorhynchus*) **The Senegal Touracou** (*T. senegalensis*). **The White-crested Touracou** (*T. corythæix*).

The Touracous or Plantain-Eaters, sometimes called Clock-birds or



Copyright.]

[Photo. by W. S. Berridge, F.Z.S.]

Fig. 1.—The White-crested Touracou.

Helmet Birds, are African forms with a crested head and soft plumage, in shades of green and red. A remarkable feature is that the colouring matter of the red feathers is soluble in water, so that it is washed away during rain or in a bath, although it is subsequently replaced.

The Laughing Kingfisher (*Dacelo gigas*).

This powerful Australian bird is the largest of the family of King-

fishers, and is a land feeder, protected in Australia for its skill in killing reptiles. It is also adroit in catching mice. Its powerful clamorous laugh is often to be heard in the Gardens. Kingfishers form a group found all over the world, but most abundant within the tropics. Specimens of several other Kingfishers, such as the Australian Sacred Kingfisher, are in this Aviary. They are frequently brilliantly coloured birds, with glancing metallic tints, the Laughing Kingfisher being one of the dullest of the group. They are easily recognised by their large heads, long, straight bills and small feet with joined toes. They lay white eggs in a burrow or hollow tree, and most of them are ardent fishers, watching for their prey from a fixed perch and then darting upon it, while others (*Ceryle*) hover over the water.

The Doves and Pigeons (*Columbidae*).

form a large family with members practically all over the world. They have small heads, with weak bills soft and fleshy at the base, and heavy bodies clad in firm, close, powdery plumage, usually grey or greenish in colour, but in some of the tropical Fruit-pigeons of varied and gaudy tints. The young are helpless and nearly naked, and are fed by both parents in the early stages by a milky secretion from the crop, the so-called pigeon's milk. The note is usually the well-known "coo," but is a deep boom in the Imperial Pigeon (*Carpophaga*) and a whistle in the green Fruit-pigeon (*Treron*). Nearly all are good to eat. The famous Dodo (now extinct) was a gigantic, flightless Ground-pigeon. There are usually large numbers of Doves and Pigeons in the Gardens. Some are to be found sharing the quarters of the Pheasants (Nos. 31 and 45). Many of the rarer and more beautiful forms are kept in the Aviary that is now being described. Such are the Wonga-Wonga Pigeon of Australia (*Leucosarcia picata*), an excellent table-bird but a shy breeder; and the Great Crowned Pigeons of New Guinea and the neighbouring islands.

The Great Crowned Pigeon (*Goura coronata*).

This bird and its allies, the VICTORIAN CROWNED PIGEON and SCLATER'S CROWNED PIGEON, inhabit New Guinea and the adjacent islands. They are distinguished by their large size and by an erectile crest of feathers, the webs of which are loose and fluffy. They pass most of the time on the ground, but form an arboreal platform nest.

The Great Racket-tailed Drongo (*Dissemurus paradisens*),

locally common in India and Burma, is a handsome, blackish bird, recognised by its short legs and long, forked tail. It is an extremely clever mimic, with a fine natural song, and the power of imitating almost any animal, from a donkey to a canary. It may be taught to talk. The Drongos feed on insects and other small prey, which they hold in the foot, in the fashion of Shrikes. They are pugnacious in disposition and freely attack larger birds. The KING-CROW (*Dicrurus ater*) is another common Indian species.

The Starlings and Mynahs (*Sturnidae*)

belong to a widespread Old-World group of fair-sized and strikingly-coloured birds that perch on trees and usually build in holes, but spend most of their time on the ground, walking, not hopping like most of the Perching Birds. The ROSY STARLING (*Pastor roseus*), conspicuous by its plumage of black and rose-pink, is one of the most handsome. It is migratory and gregarious, and does much damage to crops, but also destroys quantities of locusts and grasshoppers. It is common in India in winter and breeds in Asia Minor. Some of the Mynahs are extremely good talkers. A fine specimen of the Indian Hill Mynah is placed in the Small Birds' House (No. 14).

The Weaver-birds (*Ploceidae*)

are Sparrow-like birds closely allied to the Finches. The males assume a bright yellow livery in the breeding season. They are remarkable for the skill with which they construct hanging nests of woven vegetable fibres. They are intelligent and easy to train. Many come from Africa, others from S.E. Asia.

The Long-tailed Whydah-bird (*Chera procne*)

is a handsome Weaver-bird from South Africa, conspicuous by its long tail, and with considerable power of flight.

The Sulphury Tyrant Bird (*Pitangus sulphuratus*).

The Tyrants are active and restless small birds, often conspicuously coloured, and in the New World represent the Flycatchers and Shrikes of the Old World.

The Cardinals (*Cardinalis*)

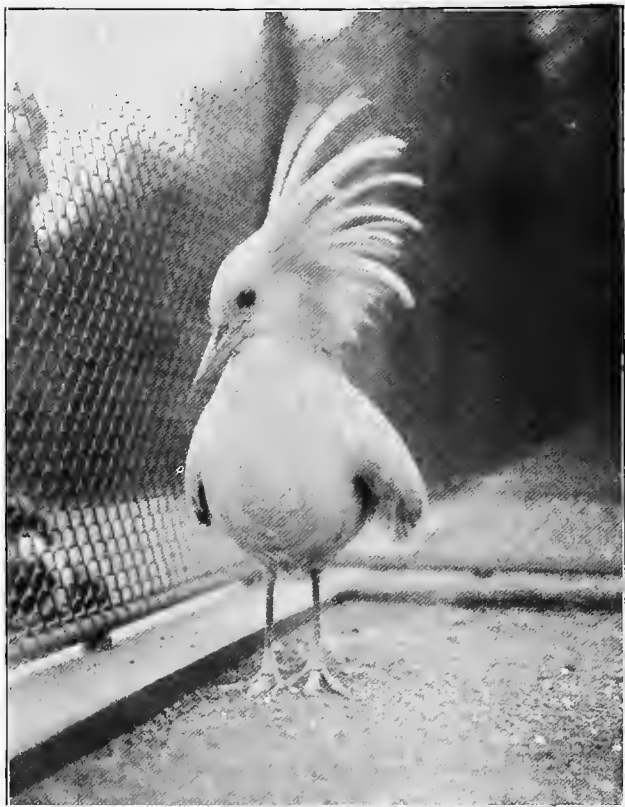
are variously coloured, some having bright red heads. They are seed-eaters, allied to the Linnet.

The American Robin (*Turdus migratorius*).

The name "Robin" has been given by English-speaking people to several different kinds of birds, generally because of their familiar habits and red - coloured breasts. The English Robin, or Redbreast, is *Erithacus rubecula*; the Persian, Japanese and Corean Robins are closely allied species, belonging to the same genus; the larger American Robin is a migratory Thrush (*Turdus migratorius*); the Australian and Pacific Robins belong to the genus *Petroeca*, probably allied to the Chats; the Cape Robin (*Cossypha caffra*), the Indian Robin (*Thamnobia*), the New Zealand Robin (*Miro*) are small Thrush-like birds.

The Kagu (*Rhinocetus jubatus*).

This rare, grey bird, rather larger than a fowl, is a native of New Caledonia, and, although it looks like a stumpy Heron, is related to Sun-bitterns, Rails and Cranes.



Copyright]

[Photo. by W. S. Berridge, F.Z.S.

Fig. 2.—The Kagu.

The Masked Wood-Swallow (*Artamus personatus*).

Wood-Swallows are small woodland birds, common in Australia and India, with one species in Africa. They assemble in flocks like Swallows, hawk insects, and frequently hover in the air. Their affinities are very doubtful, and they possess sets of feathers called "powder-down" patches, which give off a greasy powder, and are very rare in Passerine Birds.

The path leading beyond the Western Aviary passes a service yard and the entrance to the Polar Bears' Pond, which should be visited later, and then leads on to ground laid out early in 1911. To the right lie

1a. THE WESTERN GOOSE PADDOCKS.



Copyright.]

[Photo. by W. P. Dando, F.Z.S.

Fig. 3.—The Cereopsis Goose.

Geese

are much more terrestrial in their habits than are their close allies, the Ducks and Swans.

The Australian BLACK AND WHITE GOOSE (*Anseranas semi-palmata*) differs from its allies in having the hind toe, which is rudimentary in the others, normally developed, and in having the webs between the

front toes very imperfectly developed. The African SPUR-WINGED GEESE (*Plectropterus*) are metallic black with some white on the throat and abdomen. The UPLAND GEESE (*Chloephaga magellanica*) come from the Falkland Islands and differ in a remarkable way from their nearest allies. In most Geese, as contrasted with Ducks, the sexes are much alike in coloration and general appearance. The female Upland Goose is quietly coloured, chestnut and greyish-brown, with bars of black, while the male is brilliantly white, except on the back, which is grey. The legs of the male are black, those of the female yellow. The EMPEROR GOOSE (*Philacte canagica*) is a fine goose from North-East Asia and North-West America. A pair acquired by the Society in 1908 was probably the first to be exhibited in Europe.

The Cape Barren, or Cereopsis Goose (*Cereopsis novæ-hollandiæ*).

These are large Geese, natives of South-east Australia and Tasmania. They are grey-brown in colour with a spotted pattern, large yellow cere, reddish feet, and black toes and green bill. They are active and powerful birds, and in 1909 quarrelled with a pair of much larger Cranes over a nest, and suddenly set upon them and killed them. They are terrestrial in habit, and are allied to very large extinct New Zealand birds (*Cnemidornis*) which had lost the power of flight.

Other Geese are to be found in the Lion House Paddocks. To the left of the Goose Paddocks lies

1b. THE WESTERN DUCK POND.

This contains a number of beautiful Ducks from different parts of the world, including the Cinnamon, Blue-winged and Brazilian Teal.

The Mandarin Duck (*Æx galericulata*)

is a native of China, and the males are perhaps the most gorgeously and eccentrically decorated of all birds. The females are very quietly coloured, in a pattern of brown, grey and white. Specimens of this beautiful and now well-known duck were exhibited in the Gardens in 1831, and bred there in 1834.

The Summer Duck (*Lampronessa sponsa*)

comes from North America and Cuba, and is almost equally beautiful. It is an inland species, feeding on insects, seeds, leaves and acorns.

The European Flamingo (*Phenicopterus roseus*). **The Ruddy Flamingo** (*P. ruber*).

FLAMINGOS are birds of large size, with very long necks and legs, small webbed feet, and a remarkable bill, bent downwards in the middle, and, as in the Ducks, covered with skin instead of with horn

and provided with ridges along the edges. The plumage is white and pink in the adults, but brown and white in the young, in which also the bill is straight at first, perhaps showing that the bent character is a later acquisition of the race. Flamingos are remotely allied to Storks, and probably more closely to Ducks and Geese. They are aquatic forms, preferring salt water, and feeding chiefly on small shell-fish that they obtain in shallow water. In feeding, the long neck is curiously twisted, so that the upper half of the bill is turned downwards next the mud. About seven species of Flamingo are known, and four of these are American. The EUROPEAN FLAMINGO is still to be found in the South of France on the salt-water lagoons, where the plains of the Camargue and the Crau reach the Mediterranean between Marseilles and Aigues Mortes. They are shy and wary, and almost impossible to approach closely; but they breed occasionally, forming villages of mud-nests in the shallow water. They are abundant in the South of Spain, in Tunis and Egypt, and in Western India.

The visitor should follow the path between the Geese and the Duck Ponds, to its end; on the right is an exit turnstile; turning to the left round the Duck-Pond he will reach a flight of steps on the left which leads to

2. THE POLAR BEARS' POND.

This, completed in May, 1910, consists of a large enclosure with a circular pond surrounding a rocky island, and a set of dens, two of which can be shut off.

The Polar Bear (*Ursus maritimus*).

The POLAR BEAR or ICE BEAR is extremely attractive in captivity because of its white coat and active playful manners. In the coldest weather it is always ready to swim and dive in its pond, tossing about the ice with the greatest enjoyment. The Polar Bear inhabits the whole of the Arctic Ocean, on the edge of the polar ice-cap, retreating northward in summer, and coming south in winter, but always keeping near the edge of the sea. It is a superb swimmer, and lives on fish, seals and walrus. Polar Bears are captured as cubs by whalers and sealers, and do well in captivity.

The visitor should now descend from the South side of the Polar Bears' enclosure to the path skirting the edge of the Park, and turning to the left follow it until he reaches the edge of the Park Paddocks (No. 10a). and then again turn to the left; on his right is a large wire enclosure.



Copyright.]

[Photo by H. S. Berridge, F.Z.S.]

Fig. 4.—The Polar Bear.

3. THE SOUTHERN AVIARY.

Ponds and large trees are included in the space, and GULLS, HERONS, CORMORANTS, SKUAS, GANNETS and other aquatic birds are exhibited under conditions much more approaching nature than has been possible hitherto. Some KITES and KESTRELS (see No. 29) and some CHOUGHs have been placed in this Aviary.

The Common Heron (*Ardea cinerea*)

THE HERONS, BITTERNS, and EGRETS form a large and widely distributed family of birds (*Ardeidae*), allied to the Storks and Ibises. Their size varies from that of a Crane to that of a Starling, but all have the same general build and habits. The bill is stout and sharp, the neck is long and carried in a curve; the body is thin and light, and the hind toe is well developed. These birds perch freely, and often build in trees; they walk little, usually standing motionless for a very long time in watch for their prey. They are surly in temper, and are able to inflict dangerous wounds by "jabbing" with the heavy, sharp bill. At the breeding season very handsome ornamental plumes are often developed, the white filmy plumes of the Egrets being specially valued, and known commercially as "Osprey" plumes. There are generally to be seen in the Gardens examples of the COMMON EUROPEAN HERON (*Ardea cinerea*); the PURPLE HERON, also European (*A. purpurea*); the COCOI HERON (*A. cocoi*), an American form; the large African GOLIATH HERON (*A. goliath*); the EUROPEAN NIGHT-HERON (*Nycticorax griseus*); GARDEN'S NIGHT-HERON (*N. gardeni*); and the South American VIOLEACEOUS NIGHT-HERON (*N. violaceus*).

Gulls.

THE GULLS and their allies are very closely related to shore birds, such as PLOVERS and SAND-PIPERS, and, like these, lay large, spotted eggs, usually in a rude nest on the ground. They are more adapted to an aquatic life, having small webbed feet and very well-developed wings. The brilliant grey and white colouring so common in the group is arranged, like the similar colouring in many other animals exposed to a glare of light, to make the creatures as invisible as possible. The white under surface is, in the natural condition of things, rendered grey in appearance by being in the shadow, while the bright light shining on the darker upper surface tones that down, so that the whole colour appears a uniform very pale grey, resembling stones on the sea-shore. Strange as it may appear to those who have studied Gulls only in captivity or in museums, they are much more invisible in their natural haunts than they would be were the whole body a natural grey tint. Young Gulls, before they have acquired the adult plumage, are generally mottled grey or brown, the colour and pattern recalling the coloration found among Plovers and Sand-Pipers. Gulls are almost as omnivorous as Crows, feeding on aquatic animals, insects and garbage of all kinds. In the Society's collection there are generally to be found examples of the HERRING GULL (*Larus argentatus*), with a blue mantle and flesh-coloured feet; the COMMON GULL (*Larus canus*), which has a yellow bill and greenish-yellow feet; the BLACK-HEADED GULL (*Larus ridibundus*), which has red feet; JAMESON'S GULL (*L. novæ-hollandiæ*), from Australia, with no hood and white feet; the GREATER BLACK-BACKED GULL (*Larus marinus*), the largest of

the Gulls, which is said to attack young lambs in the Scottish highlands. The circumpolar IVORY GULL (*Larus eburneus*) is pure white with black feet. The Gulls in the Gardens breed freely, and the plumage of the young may be studied to advantage. It is practically impossible to distinguish the sexes of living Gulls, except by observing their habits during the pairing season.

The Cormorant (*Phalacrocorax carbo*)

frequents the coasts of Europe and is a fish-eater, watching for and diving after its prey. It is easily tamed and has been trained to catch fish for its owner, a strap being placed round its neck so as to hinder it from swallowing its captures.

The Gannet, or Solan Goose (*Sula bassana*),

is a near ally of the Cormorants, and is a large white-plumaged bird with the primary wing-feathers black. It is a fish-eating bird of the Northern Hemisphere.

On the other side of the path is placed a low range of old sheds, destined to be removed at an early date ; these contain Swine and Rodents.

4. THE SWINE-HOUSE.

The Swine (*Suidæ*)

are a family of ungulate or hoofed mammals, belonging to the division with an even number of toes, and related to the hippopotamus. One of their special characters is the presence of an elongated, mobile snout, ending in a flat, nearly naked, round or oval surface in which the nostrils lie. Wild forms of Swine occur in nearly every part of the world except Australia. They are omnivorous and intelligent and cleanly, the filth of a pigsty being due more to the conditions imposed by man than to the natural habits of the animals.

The European and Indian Wild Swine (*Sus scrofa* and *S. cristatus*).

The Wild Swine is still common in Europe, and extends into Central Asia. Various wild breeds, either of the European Swine or of closely-allied species, occur almost all over Europe and Asia, and very many islands of the Malay Archipelago have a characteristic race. It is extremely difficult to be certain as to the exact parent of the domestic pigs. Many different races of men have domesticated the pig, and they may have started with different wild species. In most of these domesticated races the snout is much shorter, the bristles are weaker, and the legs smaller. The colours of the wild and domestic breeds differ considerably, but the young of nearly all wild pigs are similar in colour, being dark brown with longitudinally-placed stripes of a paler shade. This pattern, which disappears in a few months, may be a relic of the ancestral coloration.

The White-whiskered Swine (*Sus leucomystax*)

is a wild pig from Japan.

The East African River Hog (*Potamochoerus johnstoni*). **The Red River Hog** (*P. penicillatus*).

The River Hogs are the chief African representatives of the Pigs and sometimes breed in the Gardens ; it is interesting to notice that **their** young show stripings.

The Wart-Hog (*Phacochoerus aethiopicus*)

is a large African Pig which derives its name from the presence of large, warty protuberances on the sides of the face. The eye-teeth of the upper jaw grow to form enormous tusks, curved outwards, upwards and inwards, those of the lower jaw forming similar but smaller tusks.

5. THE RODENTS' HOUSE.

The Rodents (*Rodentia*)

form a distinct order of Mammals, generally of small size. They possess chisel-shaped front teeth, adapted for gnawing, with enamel only on the front surface. These teeth continue to grow during life, and where the teeth of the upper and lower jaws meet, the softer parts behind are rubbed away, thus leaving a perpetually sharp edge of enamel. Many of the Rodents burrow, and nearly all use their fore-paws to hold their food in the process of gnawing. The SQUIRRELS, RATS and MICE, RABBITS and HARES, VOLES, BEAVERS and PORCUPINES are familiar examples of the group. These creatures are housed in different parts of the Gardens (see Nos. 37, 42a and 58), but some of the hardier sorts are placed in the present building.

The Coypu (*Myocastor coypus*)

is a large amphibious Rodent from the rivers and lakes of temperate South America. It lives in burrows, feeding chiefly on aquatic plants. The soft brown fur, which is left when the coarse bristles have been removed, is much used as the lining of coats, forming a cheap match for beaver. The Coypu is occasionally exhibited in travelling menageries as a Giant Rat.

The Agouti (*Dasyprocta*),

of which there are several species, is a slender-limbed and brownish-speckled short-tailed rodent from S. America.

The Viscacha (*Lagostomus trichodactylus*)

is a nocturnal, burrowing rodent, which lives in large colonies in the South American Pampas. The under part of the tail is thick and horny, and the animal produces a loud noise by rapidly beating the ground with it.

The Porcupines

are spiny Rodents divided into two distinct groups, the terrestrial Porcupines of the Old World, some of which are exhibited here, and the arboreal Porcupines of the New World.

The Crested Porcupine (*Hystrix cristata*),

and species closely allied to it, occur in Southern Europe, Africa and India.

The Brush-tailed Porcupines (*Atherura*)

are natives of Africa and the Malay Archipelago, and have a group of flattened spines at the tip of their long tails.

The Capybara or **Carpincho** (*Hydrochærus*)

is the largest of all existing Rodents. It is pig-like in form, and is found in all South American rivers on the eastern side from Guiana to La Plata. A pair is placed in a paddock next to the Rodents' House.

The visitor should now visit the Collection of Apes and Monkeys, beginning with the Outdoor Cages opposite the Capybaras' paddock.



Copyright]

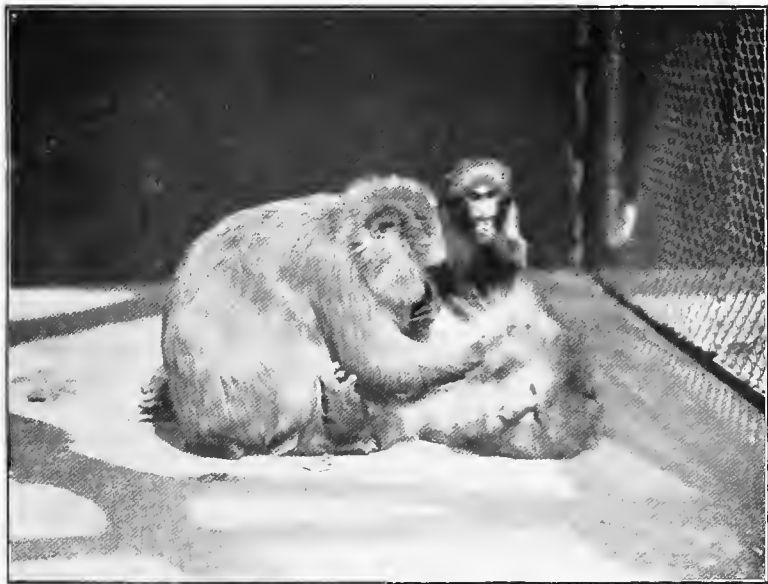
Fig. 5. - The Capybara.

[Photo. by W. S. Forridge, F.Z.S.]

APES AND MONKEYS (*Primates*).

The Society maintains a large collection of Monkeys and Apes, including examples of all the larger natural groups. The Primates may be divided into (1) *Anthropoid Apes*, the highest and most human, and restricted to the Old World; (2) *Baboons*, powerful creatures with long muzzles, confined to Africa and Arabia; (3) *Old World Monkeys*, found in Africa and Asia, without prehensile tails; (4) *New World Monkeys*, many of which have prehensile tails; (5) *Lemurs* and *Lemuroids*, found in Africa, Madagascar, and Asia.

Apes and Monkeys are best known as tropical and semi-tropical animals, but in the Himalayas species of *Presbytes* are found leaping from bough to bough of snow-covered pines. Some of the hardier forms will be found in



Copyright.]

[Photo. by W. S. Berridge, F.Z.S.]

Fig. 6.—Japanese Apes and Young.

6. THE OUT-DOOR MONKEYS' CAGES.

This small group of buildings has been adapted to house some of the Baboons and Macaques. A pair of Japanese Apes (*Macacus speciosus*)

was placed here in the autumn of 1905, and the female gave birth to and reared a healthy baby early in 1906.

The BABOONS and MANDRILLS are powerful African Monkeys, adapted for a life on the ground, and well fitted to protect themselves from such dangerous enemies as the lions, leopards, hyænas and jackals of their native country. They have strong muzzles with huge canine teeth, and display courage, agility and resource, often combining for defence and attack. In captivity they show high intelligence, and although occasionally dangerous they are capable of showing great affection. Some of the Baboons and Mandrills have brightly coloured bare patches of skin on the face and buttocks.

The Mandrill (*Papio maimon*).

The large Mandrill shown in an open-air cage outside the Monkey House is one of the finest examples of this powerful and vividly-coloured Ape that has ever been exhibited in captivity. It is a native of West Africa, and its huge teeth are used for fighting, the diet being vegetarian, although it will eat small birds.



(Copyright)

Fig. 7.—The Mandrill.

[Photo. by W. S. Berridge, F.Z.S.]

There are very many species of MACAQUES, some of them natives of India, whilst one of them, the tail-less Barbary Ape, enters Europe, being the well-known monkey of the Gibraltar Rocks. The COMMON MACAQUE and the BONNET MONKEY are frequently kept as pets, being good-tempered and docile when young. Except the Anthropoid Apes, most of the Monkeys reside in

7. THE MONKEY-HOUSE.

This house was built in 1864 and re-decorated in 1906, when a new combined heating and ventilating apparatus was fitted. It contains a number of smaller side-cages in which species that will not dwell peacefully with their neighbours are to be found, and a set of large central cages. It may be interesting to note that, in spite of an almost universal belief, monkeys are extremely rarely infested by fleas. No doubt their own habits protect them, as fleas would have small chance of escaping the attentions of the friends of their hosts; but, in most cases, a monkey searching another monkey is not hunting for fleas, but for little masses of a salt-tasting secretion which occasionally exudes from the pores of the skin. Another popular belief is that all monkeys differ from man in having a tail. It will be noticed, however, that all varieties in the condition of the tail occur; among the Macaques, for instance, some species have a long tail, some a short tail, and others no tail. Moreover, it is to be noticed that the tail is seldom used as a grasping organ; no Old-World monkey has a prehensile tail.

The Common Macaque (*Macacus cynomolgus*)

is a native of India, and is by far the most common monkey in captivity.

The Vervet Monkey (*Cercopithecus pygerythrus*)

belongs to the common African genus, *Cercopithecus*, of which a very fine series is exhibited; it and its close allies the PATAS and GREEN MONKEYS are active and quarrelsome, and occasionally dangerous. The MONA MONKEY and the DIANA MONKEY, other species of the same genus, are equally handsome and more easy to keep as pets.

The White-collared Mangabey (*Cercocebus aethiopicus*). **The Sooty Mangabey** (*C. fuliginosus*)

are fine examples of another African genus, the members of which are lively and good-natured, and are popular as pets.

THE NEW-WORLD MONKEYS are delicate in organisation and are seldom well represented in zoological gardens. Some of them will be found in a small, warm House in the North Garden (No. 42a).

The Capuchins or Sapajous (*Cebus*)

are the hardiest and best known. They differ from man and all the Old-World monkeys in having four more grinding teeth, one in each

corner of the jaw, and most of them have a prehensile tail, used in climbing and swinging. These little monkeys are intelligent and docile. The organ-grinder's monkey is sometimes a Capuchin, but more often an Old-World Rhesus.

The Howler Monkeys

are heavier creatures, with larger muzzles; their great characteristic is the powerful voice which is associated with peculiarities in the vocal organs.

The Spider Monkeys (*Ateles*)

are slender monkeys with long limbs and prehensile tails.

The Woolly Monkeys (*Lagothrix*)

have a prehensile tail, thick, woolly fur, and a rather bulky, heavy shape. They are much persecuted by the Indians on account of the excellence of their flesh as food. Humboldt's *Lagothrix* (*L. humboldti*) has the fur nearly black.



Copyright.]

Fig. 8.—The Lion Marmoset.

[Photo. by W. S. Berridge, F.Z.S.]

The Marmosets (*Callitrichidæ*)

have the same number of teeth as Old-World monkeys (but disposed differently, there being three pre-molars and two molars) and are well known as gentle and affectionate pets. Marmosets are delicate in captivity, and feed on insects and grubs, such as meal-worms, as well as on fruit. Some of the Marmosets are placed in Nos. 42a and 43.

The Lemurs

are very unlike Monkeys in many ways, and probably are survivors of the connecting links between Man and Monkeys on the one hand,



Copyright.]

Fig. 9.—Smith's Dwarf Lemur.

[Photo. by W. S. Berridge, F.Z.S.]

and the lowest quadrupeds on the other. They are friendly and docile creatures, with large eyes, long muzzles, usually long tails and fine long-haired fur, and do well in captivity, not infrequently breeding.

The Aye-aye (*Chiromys madagascariensis*)

is a lemur-like animal, about the size of a large cat, with incisor teeth like those of a rodent, and a long bushy tail. The third finger of each hand is very long and slender. The Aye-aye is nocturnal, and has a loud shrill cry from which it gets its name.

It is hoped that special accommodation for Lemurs will be provided before long ; in the meantime the Reception Sheds in the North Garden (No. 47) are being used as a Lemur House.

The visitor on leaving the Monkey-House should turn to a large red-brick building opposite it. This is

8. THE APE-HOUSE.

The ANTHROPOID APES are creatures very closely resembling and akin to man in structure, appearance and intelligence. In the brain, the organ of mind, the resemblance is specially striking, and there is less difference in size and structure between the well-developed brain of a Chimpanzee and that of the lowest living savages, than there is between the brain of such a savage and the brain of a high European type. These Apes are all inhabitants of tropical forests, and are difficult to rear in captivity, partly because they are subject to some of the common diseases of man and liable to take infection from him. The Ape-house was constructed at great cost to secure favourable conditions, and especially an equable temperature. The public are separated from the Apes by a glass screen, partly with the object of keeping off chance



Copyright.]

Fig 10.—Young Orang-Utan.

[Photo, by H. P. Dando, F.Z.S.

infection from the colds or influenza of visitors ; but it is doubtful if the Apes do not lose in spirits as much as they gain in freedom from infection, as they are all extremely curious and inquisitive, and like to make friends with visitors.

All these Apes, like man, are devoid of tails, and all can approach the upright gait.

The Orang-Utan (*Simia satyrus*)

is a native of Borneo and Sumatra, distinguished from the other Apes by its brown skin, red hair and small ears. The Orang-Utan is docile and affectionate, and many individuals have been highly trained, young examples having learned to wear clothes, and to eat and drink with ordinary utensils. The figure is taken from a young female that lived for several years in the Gardens.

Chimpanzees (*Anthropopithecus*)

are much more often to be seen in captivity, and may be recognised at once by their large ears, black hair and light-coloured skin, usually



Copyright.]

[Photo, by H. P. Dando, F.Z.S.

Fig. 11.—Young Chimpanzees.

with dark patches on the face. They are inhabitants of a wide range of tropical Africa, and almost certainly belong to several species.

Chimpanzees are extremely intelligent, and several of them, like "Sally," who lived for many years in these Gardens, have been trained to perform feats that show an intelligence much superior to that of the dog, and closely akin to the mental powers of man. Some of the younger Chimpanzees in the collection are taken out into the Gardens regularly in the summer months. There is no doubt but that a number of different kinds of Chimpanzees exist, although naturalists are not yet agreed as to how far these represent species, sub-species, local races or varieties.

The Gibbons (*Hylobates*)

are the smallest and least man-like of the Anthropoid Apes, but, apart from trained examples, they have a more upright gait than that of the other Anthropoids. The GIBBONS are arboreal Apes, and swing from branch to branch with extreme agility, using either hands or feet.

8a. WESTERN PHEASANTRIES.

The Paddocks between the Monkey-house and Ape-house contain ground-birds for which they are suited, such as the YPECAHA RAIL (*Aramides ypecaha*) from South America, and the WEKA RAIL (*Ocydromus australis*) from New Zealand, the "Native Hen" (*Tribonyx mortieri*) of S. Australia and Tasmania, and smaller birds, such as Crested Pigeons (*Ocyphaps lophotes*) from Australia.

On leaving the Anthropoid Ape-house, the visitor should pass on to

9. THE STORK AND OSTRICH-HOUSE.

The Ostrich-like, or Struthious, Birds are all flightless, although the anatomical structure shows plainly that, in this respect, they are degenerate, having descended from ancestors with wings capable of flight. They differ from most birds in having a flat breast-bone, and a tail with many bony joints. In former times they were spread widely over the earth, but are now limited in their occurrence. The OSTRICH is found only in Africa and Arabia; the RHEA only in South America; the EMEU only in Australia; and the CASSOWARIES are confined to North-East Australia, New Guinea, and adjacent islands, while the KIWI is peculiar to New Zealand.

The Ostrich (*Struthio camelus*). The Cape Ostrich (*S. australis*).

The Ostrich, much the largest bird now living, appears in several forms, which may be true species or only local races, and is found practically all over Africa in suitable localities, south of the Atlas, and in parts of Arabia. A fine male stands about eight feet high; the feet are provided with two toes only; the wing is fairly large but flightless, and provided with strong claws on what correspond to the thumb and



Copyright]

[Photo by W. P. Dando, F.Z.S.

Fig. 12.--The Somali Ostrich.

forefinger. The males resemble the females at first, but in the adult condition are black with white plumes in the tail and wings, and in the breeding season show red colouring on the bill and legs. Ostriches are swift runners, and fond of bathing. They are polygamous, several hens laying in one nest, on which the hens sit by day and the cock by night, although much of the heat required for incubation is supplied by the sun. They are vegetable feeders, and will maintain themselves on poor pasture; in captivity they will devour almost anything, from meat to keys and coins.

The Rhea (*Rhea americana*). Darwin's Rhea (*R. darwini*).

These birds, sometimes called the South American, or Three-toed Ostriches, are natives of the pampas or open plains of South America. They are smaller than the true Ostrich, but their wings, although incapable of flight, are larger. In habits they resemble the Ostrich. They frequently breed in captivity.

The Emeu (*Dromæus novæ-hollandiæ*)

inhabits Australia, frequenting open country, and now, in consequence of the spread of civilisation, is getting scarce. It is at once distinguished from the Ostrich and Rhea by its hairy-looking plumage, each feather of which consists of two equal portions corresponding respectively to the "shaft" and "aftershaft" of an ordinary feather. The wings are very small.

The Australian Cassowary (*Casuarus uniappendiculatus*). **Westerman's Cassowary** (*C. westermanni*).

The Cassowaries are closely related to the Emeus, and have similar small wings and hairy plumage. The plumage is, however, always black in the adults, in which, moreover, the head and neck are naked and very brilliantly coloured and decorated with wattles and a horny helmet. The small inner toe is usually armed with a long claw that makes a formidable weapon.

The Kiwi (*Apteryx australis*, and other species).

These practically wingless birds of New Zealand differ much from the other Struthious birds. Their size is small, not exceeding that of a large fowl; the bill is very long, bristled at the base, with the nostrils set at the extreme tip, and is used like that of the snipe in probing for worms. The plumage is hairy-looking. Although of extreme zoological interest, these birds are not good objects for exhibition, as they are very shy and nocturnal. They lay eggs that are enormous in size; and they have the misshapen appearance of dwarfs. They are probably descended from much larger flightless birds, that at one time inhabited New Zealand. The eyes of the Kiwi are small, whereas in the other Struthious birds they are extremely large. The sense of smell is highly developed.

The Storks,

examples of which are to be found in the northern portion of this House, form a small family of large birds distributed nearly throughout the world. They are distinguished by long, powerful bills, long legs, and more or less pied plumage. They have no voice muscles, the only sound they habitually make being a clattering with the bill, but Adjutants are known to bellow in the breeding season. They are highly carnivorous, and many of them are protected in cities as scavengers. The WHITE STORK (*Ciconia alba*) is the familiar European form. It is a regular summer visitor to many cities, placing its nest on chimney-stacks and on the roofs of buildings. It still occasionally visits England, but has long ceased to breed in this country. The BLACK STORK (*Ciconia nigra*) is rarer, but breeds on high trees in Denmark and N. Germany. The AMERICAN JABIRU (*Mycteria americana*), recognised by its bare head and white plumage, inhabits the rivers and swamps of South America. The INDIAN ADJUTANT (*Leptoptilus*

dubius) is one of the largest flying birds. The LARGE JABIRU (*Xenorhynchus asiaticus*) is found from India to Australia. The MARABOU (*Leptoptilus crumeniferus*) is a large Stork from West Africa, the long tail coverts of which form the genuine Marabou plumes.

CRANES. Some of the Society's large collection of Cranes (see p. 80) are generally placed in this house.

This House is convenient for delicate mammals, and occasionally some are to be found in it, such as the small South American Deer known as BRICENI'S BROCKETS (*Mazama bricentii*), GUATEMALA BROCKETS (*M. tema*), Savannah Deer (*Cariacus americanus savannarum*) and Australian Wallabies.

The Paddocks on the South side of the Stork and Ostrich House are separated by a path from

10. THE SEA-LIONS' POND.

The SEA-LIONS, or SEA-BEARS, WALRUSES and SEALS form a set of Carnivorous Mammals, the members of which differ from other Carnivora chiefly in being very highly modified for life in the water. They are true air-breathing animals and come ashore to breed, but they spend most of their lives in water, generally salt water, and the limbs and tails are adapted for swimming. SEALS and SEA-LIONS are common and popular inhabitants of the Gardens, and as they are frequently confused, the distinctions between the two sets are worthy of notice.

Sea-Lions (*Otariidæ*)

have small external ears, and flat, triangular, naked front flippers without claws. When on land they use the hind feet in progression, these being turned forward under the body. The so-called FUR-SEALS, from which the most valuable "Seal-skin" of commerce is obtained, are really Sea-Lions peculiar to the North Pacific.

Seals (*Phocidæ*)

have no external ears and have stout, short front flippers, covered with hair and carrying nails. When on land the hind limbs are dragged behind the body, not being used in progression. The skins of these Seals have very little value.

The Californian Sea-Lion (*Otaria gillespii*).

This is the species most easily caught alive, and so most often seen in captivity. Its home is the coast of California, and as its favourite breeding grounds are now protected by the United States Lighthouse Board it has a good chance of escaping extermination. This Sea-Lion and its ally the CAPE SEA-LION do extremely well in captivity. They become docile and are very easy to train. Their public performances, in water and out of it, at feeding time, have always been one of the great attractions of the Gardens.

The Black-footed or Cape Penguin (*Spheniscus demersus*). **The King Penguin** (*Aptenodytes pennanti*).

No birds are more curious in their anatomical structure or more interesting and amusing in their habits than the Penguins. They are confined to the seas of the Southern Hemisphere, and range in size from the Emperor Penguin, standing four feet high, to species smaller than an ordinary Duck. All have fin or paddle-shaped wings,



Cyprighi]

Fig. 13. —The King Penguin.

[Photo by W. S. Berridge, F.Z.S.]

which are not folded as in ordinary birds, but hang down at the sides as the bird stands erect ; there are no true quills, the body being covered by short feathers resembling scales. The wings are used in swimming and are useless for flight, but their structure shows that they are modified from true flying wings. The hind legs are set very far back, and on land the Penguins waddle and shuffle about in a most comical fashion, holding their bodies upright. They are highly intelligent and become very tame, following the keeper about.

A set of Cape Penguins, recognised by their black feet, and white chests with black stripes, has been placed in the Sea-Lions' Pond. Since 1906, one or more pairs have bred and reared their young repeatedly in the enclosure.

The King Penguin inhabits islands in the South Pacific.

After leaving the Sea-Lions' Pond, the visitor should follow the path Eastwards, keeping the large Antelopes' Paddock to the left ; on his right lie

10a. THE PARK PADDOCKS.

To the right of the boundary wall from the Swine House to the Reptile House lies a strip of ground added to the Gardens in 1908. The Society agreed to exhibit on this ground a series of animals freely visible to the public in Regent's Park. These will be changed from time to time, but during 1911 will consist probably of Rheas (see p. 25), Persian and Sambur Deer (see p. 59), Wallabies (see p. 92), Gynee Cattle, Yaks and Zebus (see p. 62), Zebras (see p. 109), and Peacocks.

Some little way beyond the Antelopes' Paddock, and to the right of the main path, is a range of brick, glass-covered shelters. These are

11. THE WOLVES' AND FOXES' DENS.

Wolves, Foxes and Jackals are all species of the genus *Canis*, and are close allies of the domestic Dog.

The Wolf (*Canis lupus*)

is the largest and most powerful, and occurs throughout a considerable part of the northern hemisphere, appearing in many varieties, often differently coloured, to which different names have been given.

The Coyote or Prairie Wolf (*Canis latrans*),

the common New-World form, is a fairly distinct species with a peculiar cry, half bark and half howl. It is about a third smaller than the grey wolf, but varies in colour according to locality. The Coyote is extremely intelligent ; in the wild state it prefers cunning to bravery, and in captivity becomes gentle and affectionate.

The Common Indian Jackal (*Canis aureus*). **The North African Jackal** (*C. anthus*). **The Black-backed Jackal** (*C. mesomelas*).

Jackals are smaller than Wolves, and have the tail larger and more bushy. They do not go in packs so much as most canine animals; they hunt by night, living on carrion, but also robbing hen-roosts. Many species are known in S. Asia, S.E. Europe, and the whole of Africa.

The Dingo (*Canis familiaris* var.)

is the Wild Dog of Australia, and is domesticated by the natives of Australia. It is a comparatively recent immigrant, and is probably not a true member of the fauna of Australia, but was introduced by man. The Dingos have bred for some years, the litters containing some white puppies.

The Cape Hunting-Dog (*Lycan pictus*)

is a large, slight, but extremely active animal, recalling the hyænas to a certain extent in appearance, but more nearly related to dogs and wolves. It has large ears, and is curiously marked with irregular blotches of white, yellow, and black. It is a native of S. and E. Africa, and hunts its prey in packs.

The Common Fox (*Vulpes vulpes*)

and its many representatives in different parts of the world are now generally regarded as rather more distinct from the Dog than are the Wolf and the Jackal, and the generic name *Vulpes* is usually given to them. An interesting form to be seen in the Gardens is the ARCTIC FOX (*V. lagopus*), which even in the Gardens assumes, more or less completely, a white coat in winter. Examples of many other small Canines are usually exhibited, such as AZARA'S DOG (*Canis azaric*) and the Crab-eating Dog (*C. thous*) from S. America, the INDIAN DESERT-FOX (*V. leucopus*), the SILVER-BACKED FOX (*V. chama*) from S. Africa, and the SILVER FOX (*V. argentatus*) from N. America.

A DARK-ROOM for the USE of PHOTOGRAPHERS is placed in charge of the keeper at the Wolves' Dens.

12. THE LION-HOUSE.

This large red-brick building, nearly opposite the Wolves' and Foxes' Dens, was built in 1876. The interior has a range of fourteen cages along the north side, and each of these is in communication with two inner compartments, or sleeping places. Behind these runs a long service gallery, by which keepers have access to the cages, and still further to the outside are the large out-door cages. The Lion-House is heated by hot-water pipes, and was designed under the belief that Lions and Tigers were less hardy than they are now known to be. The

communication between the inner dens and the outdoor cages is provided by a series of bridges, erected in 1906.

The Lion (*Felis leo*)

is one of the most superb of living animals, and although the present range is from Southern Rhodesia to Persia and North-Western India, it is a fortunate circumstance that it does well in captivity, as its haunts are being constantly encroached on by civilisation, and its numbers are rapidly diminishing. Like the other large Cats of the Old World, the Lion has the pupil of the eye circular, but it is distinguished from these other great Cats by the presence of an abundant mane of hair on the head and shoulders of the male. The colour varies; the mane is usually yellow in the Nubian Lion and black in the more southern forms; but all intermediate conditions exist. Similarly, the colour of the skin varies from a pale, silvery grey to a deep tawny.



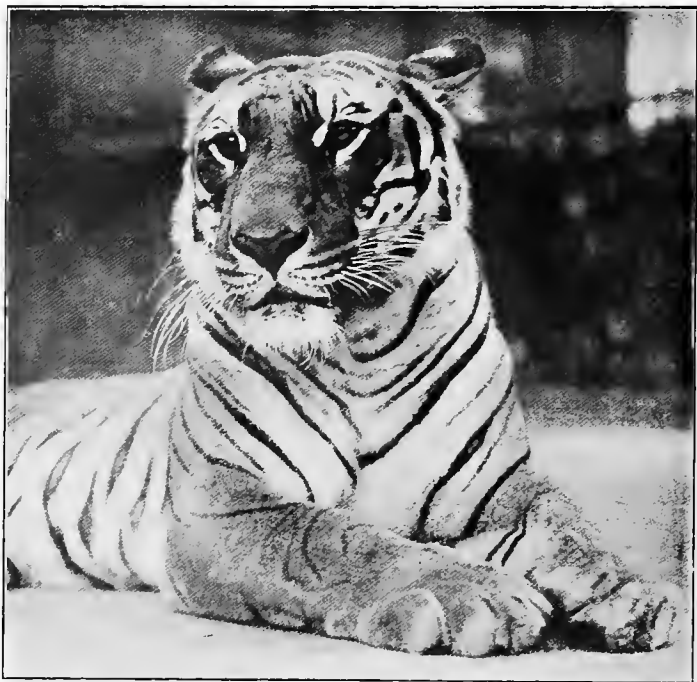
Copyright.]

Fig. 14.—The Lion.

[Photo, by W. P. Barndo, F.Z.S.]

The Tiger (*Felis tigris*)

is purely Asiatic in range, but extends from the hot jungles of India to the Russian possessions on the Amur. The more northerly forms have been found hunting on the snow, and possess a thicker and heavier fur. The Society possesses examples of several races of tiger, Indian tigers from different localities, a fine pair of Siberian tigers, the gift of the President, and a good example of the smaller Sumatra form. Notes on the races of the tiger, by Mr. R. I. Pocock, the Curator of Mammals,



[Copyright]

[Photo by H. P. Dando, F.Z.S.]

Fig. 15.—The Tiger.

will be found in the *Proc. Zoological Soc.*, 1908, p. 890. The nearly uniform dull brown of the Lion corresponds well with the open plains on which the animal roams; the vivid colouring of the Tiger is equally protective. The Tiger haunts close bush, and the vertical stripes on the body correspond closely with the patterns made by the yellow blades of grass and the vertical stripes of light and shade.

The Leopard or Panther (*Felis pardus*)

inhabits Asia and Africa, from Japan to Cape Colony. It is the third in size of the Old - World Cats, and distinguished by its coloration of spots and rosettes, similar to, but smaller in size than those of the New-World JAGUAR. The BLACK LEOPARD is a variety which is especially common in South-Eastern Asia.

The Puma, sometimes called Cougar, or Mountain Lion (*Felis concolor*),

is a native of the New World, ranging from Patagonia to Texas, although quite recently it extended much farther north. There are two varieties, one nearly red, and the other silvery grey. When pursued it takes refuge in trees, and is the most agile and the best climber of the large Cats. It is said to swim well. The largest specimens known are not more than eight feet long from the tip of the tail to the end of the snout. At no time is the Puma dangerous to man.

The Jaguar (*Felis onca*)

is found only in tropical America. It is larger and more powerful than the Puma, and more resembles the Leopard in its coloration. A pair of Jaguars bred early in 1911, producing one cub.

The Cheetah or Hunting Leopard (*Cynelurus jubatus*)

has long legs, slender body and small head, and differs from true Cats by having the claws only partly retractile. It is a native of parts of Africa and South Asia, where it is trained to hunt. It is easily tamed and quite docile, but very delicate in this country.

Some other examples of the large Cats will be found in the Small Mammals' House (No. 26).

12a. THE LION-HOUSE PADDOCKS.

The Society possesses a large number of WATER-FOWL of different kinds, and these are distributed in different parts of the Gardens (see 1A, 1B, 3, 20A, 23, 35 and 35A, 36). The Paddocks on the South Side of the Lion-House are devoted chiefly to Geese and Swans.

On leaving the interior of the Lion-House by the eastern end the visitor should turn to the left and pass round the north front of the house, inspecting the out-door cages attached to it, then crossing the Broad Walk he should enter

13. THE ANTELOPE-HOUSE and PADDOCKS.

The Antelopes

include all the ruminating mammals with hollow horns, except the Oxen, Sheep, Goats and the curious Prong - Buck of America. In many respects they come close to the Goats zoologically, and the obvious distinction between them and the Deer lies in the fact that the horns of the Deer are solid, and are shed and renewed periodically, while those of the Antelopes, like the horns of Cattle, Sheep and Goats, are

hollow, horny structures, planted on a bony core, and not shed and replaced. There are more than a hundred species known, most of which are confined to Africa, or Africa and Arabia. Some of the smaller forms, particularly those known as GAZELLES, will be found in the Gazelles' Sheds (No. 65). Naturalists now divide Antelopes into a number of groups.

The Hartebeests and Gnus (*Bubalinæ*)

are large African Antelopes, generally with short hair and ridged, sharply-bent horns. The HARTEBEEST (*Bubalis caama*) was formerly extremely abundant all over Cape Colony, but is now much reduced in numbers. It is rather ungainly, because of its great height at the shoulders as compared with the croup, and its long, narrow face. The BUBALINE HARTEBEESTE, smaller than the others, is a native of Northern Africa, and was one of the few antelopes known to ancient writers. It is referred to in the Old Testament as "Yachmin," erroneously translated in the Authorised Version as "Fallow Deer." The BLESS-BOK (*Damaliscus albifrons*) is another South African form, now getting rare. Its horns are much straighter. The BONTEBOK (*D. pygargus*), also of S. Africa, is nearly extinct, and the examples still existing are closely inbred and very delicate.

The White-tailed Gnu (*Connochætes gnu*) and the Brindled Gnu (*C. taurinus*)

have heavy heads, long manes and horse-like tails. The horns are smooth, and are sharply bent in the adult, but straight in the young. The GNUS are very active and powerful creatures, and are, perhaps, the most dangerous animals in the Gardens.

The Duikers (*Cephalophinæ*)

are small Antelopes, with naked muzzles and elongated face-glands under the eyes on the cheeks. The true DUIKERS are African creatures, but the interesting INDIAN FOUR-HORNED ANTELOPE (*Tetraceros quadricornis*) formerly included in this group, is now regarded as a relative of the Tragelaphine Antelopes. It usually has four horns.

The Klipspringers (*Oreotraginæ*)

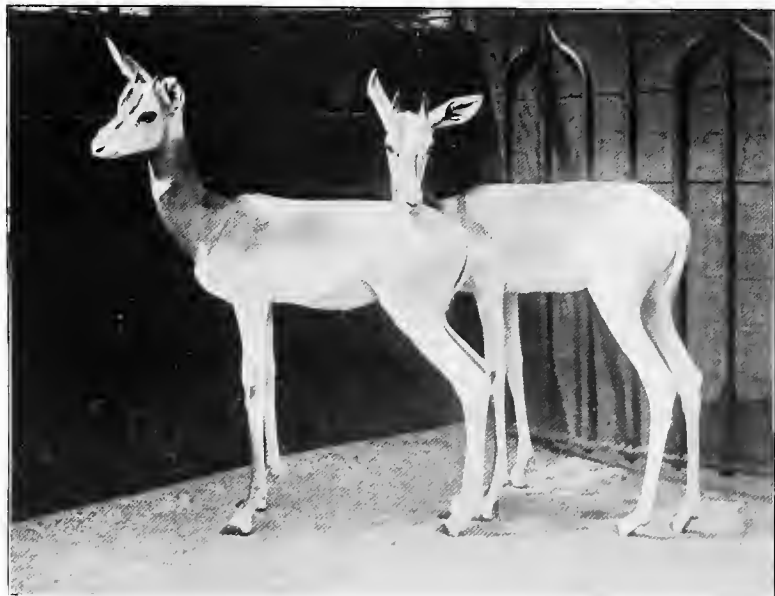
are small African mountain Antelopes, of which examples are not very often seen in captivity.

The Water-Bucks and Reed-Bucks (*Cervicaprinæ*)

include some of the most handsome of all Antelopes; in them the muzzles are naked and the females are devoid of horns. The COMMON WATER-BUCK (*Kobus ellipsiprymnus*) is a large and fine creature found near rivers in Southern and Eastern Africa. In West Africa it is replaced by the SING-SING WATER-BUCK (*K. unctuosus*), which is redder and has no white ring on the rump. A hybrid between these two species of *Kobus* has been bred in the Gardens. BUFFON'S KOB (*Kobus kob*) is a slender form from West Africa. The REED-BUCK, the NAGOR, and

ROI RHEBOK are different species of *Cervicapra*, a genus of smaller antelopes found in reedy marshes in many different localities of Africa.

The typical ANTELOPES and GAZELLES (*Antilopinae*) occur in Africa and Arabia, Central Asia and India proper, and amongst them in many cases the females are hornless. Such are the puffy-nosed SAIGA ANTELOPE (*Saiga tatarica*) from Siberia, the INDIAN ANTELOPE (*Antilope cervicapra*) and the many species of GAZELLE.



Copyright.]

Fig. 16.—Addra Gazelles.

[Photo. by H. S. Berridge, F.Z.S.]

In some of the Gazelles, the horns of the female are more slender and straighter than those of the male, as in the beautiful and rare Addra Gazelle (*Gazella ruficollis*) from the Soudan.

The next group (*Hippotraginae*) has no general popular name, and contains large African forms, the members of which have long horns in both sexes. The SABLE ANTELOPE (*Hippotragus niger*) is one of the finest Antelopes, the strongly-ringed horns of the adult male sometimes reaching a length of from forty-three to forty-four inches along the curve. It may be over four feet high at the withers. It frequents upland, wooded districts in South-Eastern and Eastern Africa.

The Tragelaphine Group (*Tragelaphinae*)

contains mostly large Antelopes with spirally-twisted horns, that, except in the ELANDS and BONGOS, are restricted to the males. The Indian and Four-horned Antelope NYLGHAIE (*Boselaphus tragocamelus*) are the only members of the group that occur outside Africa. The HARNESED ANTELOPES and BUSH-BUCKS (*Tragelaphus scriptus*, etc.) are small but beautifully marked African forms. The MARSH-BUCKS (*Limnotragus selousi*, etc.), of which examples are exhibited in the Gazelles' Sheds, are found only near the great lakes of tropical Africa. Their hoofs are enormously lengthened, to enable them to walk on reed-beds and floating herbage. The KUDUS (*Strepsiceros*) are striped forms with very elegant spiral horns. Examples of these have been brought to this country repeatedly, but have never thriven.

The Eland (*Taurotragus oryx*).

These natives of Africa are the largest of all Antelopes, a fine specimen attaining the height of nineteen hands at the withers, and weighing from 1,500 to 2,000 pounds. The flesh is highly esteemed as food, and in consequence the natural range of the Eland is rapidly narrowing. This Antelope is now rare in Cape Colony, and the advance of civilisation in East Africa is likely to prove fatal, unless in due time great preserves are set apart for it. Very many attempts have been made to acclimatise it in this country, as it needs little more protection than that given to the finer breeds of cattle. It breeds well in confinement in the Gardens and in the parks of various private owners.

Closely allied to the true Antelopes is the curious group of Goat Antelopes.

The Himalayan Serow (*Capricornis thar*). The Himalayan Goral (*Nemorhedus goral*).

The SEROWS and GOAT-ANTELOPES are a curious group of bovine animals, probably allied to the chamois of Europe, but with short, unhooked horns, and are rarely seen in menageries. The Serow, an example of which came from the Himalayas, is a large and powerful beast with a bristly mane, rough fur, and of awkward gait, but capable of traversing very difficult ground. The HIMALAYAN GORAL is a small animal with a furry greyish coat; it is gentle and friendly, but very active.

On leaving the Antelope House, the visitor should cross the broad path, when he will see facing him a set of Aviaries attached to the South side of a building next the Monkey House; this is

14. THE SMALL BIRDS' HOUSE.

This House, erected in 1906, as a gift from the late C. Czarnikow, F.Z.S., is adapted chiefly for tropical birds. It is supplied with a combined heating and ventilating apparatus, by which filtered fresh air, heated, and then moistened to any requisite degree, constantly passes through the interior.

The Finches (*Fringillidæ*)

are an enormous family of small perching birds (*Passeres*), plentiful all over the world. They are active, restless birds, with strong, conical beaks, and are chiefly seed-eaters. Many are brilliantly coloured, such as the British Greenfinches and Goldfinches, the Rose Finches of India, Eastern Asia, and North America, the Cardinals of North and South America, the Wild Canaries of Madeira, and the Cape Canary.

The Sugar-birds (*Certhiola*)

and their allies, the Quit-quits, are small, restless birds, natives of the Antilles and of tropical South America. They are often brilliantly coloured, and visit flowers like Humming-birds, or hawk insects on the wing.

The Greater Bird-of-Paradise (*Paradisea apoda*). The Lesser Bird-of-Paradise (*P. minor*). The Twelve-wired Bird-of-Paradise (*Seleucidés nigricans*). Lawes' Bird-of-Paradise (*Parotia lawesi*). Hunstein's Bird-of-Paradise (*Diphyllodes hunsteini*). Count Raggi's Bird-of-Paradise (*Paradisea raggiana*). The Red Bird of Paradise (*P. rubra*). The Violet Manucode (*Phonygama purpureo-violacea*). The New Guinea Rifle-Bird (*Ptilorhis intercedens*). The King Bird-of-Paradise (*Cicinnurus regius*).

Although their magnificent plumage makes them very different in appearance, the Birds-of-Paradise are near allies of the Crows and Ravens. They are found chiefly in closely wooded hills and ravines in the islands of the Malay Archipelago. They are less delicate than has been supposed, and do well in the open air, even in winter in this country, if provided with heated shelters to which they can retreat. Their diet consists of insects, grubs, worms and berries, seeds and fruits. The gorgeous plumes and bright colours are confined almost entirely to the males, the females for the most part being protectively coloured. They are shot by the natives with blunt-headed arrows, and many strange beliefs have been held concerning them. The Greater Bird-of-Paradise owes its specific name (*apoda*) to the report that it had no feet. The males, when in full plumage, may occasionally be seen in display, when the feathers are all erected and made to vibrate, forming one of the most beautiful objects in nature.

The Tanagers (*Tanagridæ*)

are brightly-coloured, bold and restless birds, eaters of fruit and insects, and closely allied to the Finches. They abound in North and South America. Many of the very fine examples exhibited come from Venezuela, and have been presented by Mr. A. Pam, a Member of Council.

The Red-cheeked Coly (*Colius erythromelon*).

Colies, or Mouse-birds, are a group of small, rough-skinned birds, natives of S. Africa, and probably allied to Trogons and Rollers. They live in woodland country, chiefly on fruit, green shoots and possibly insects, and creep over the boughs, using their toes and beaks.

The Barbets (*Capitoninæ*)

are heavy birds with stout bills and brilliant plumage, found in forests and gardens throughout tropical Asia, Africa and America. Their food consists of fruit, flowers, shoots and insects, and in captivity they like raw meat added to their diet. Their nearest allies are the Honey-guides (*Indicatorinæ*).

Ross's Plantain Eater (*Musophaga rossii*).

The Plantain Eaters are beautiful and rare African birds, related to the Touracous.

The Cock of the Rock (*Rupicola crocea*).

These beautiful birds, which are very rarely seen in captivity, were



C. J. right.]

[Photo. by W. S. Berridge, F.Z.S.]

Fig. 17.—The Cock of the Rock.

obtained for the Society by the kindness of Sir William Ingram, Bt., F.Z.S. They are natives of Guiana, and are bright orange in colour, with brown and white wings and dark tail feathers. They belong to the family Cotingidæ, and are grouped with Passerine birds.

The Green-billed Toucan (*Rhamphastus dicolorus*). **The Sulphur-breasted Toucan** (*R. carinatus*).

The Toucans of tropical America are very closely allied to the Barbets. They possess a very large and light bill, relatively the largest found amongst birds, and a fringed tongue. The coloration is very brilliant, both of the bill and the plumage. They are omnivorous, but live chiefly on fruit. Toucans are delicate in captivity; they have been tried in the Western Aviary (No. 1), and the Insect House (No. 43), but their delicacy does not appear to depend on temperature.

The Hoopoe (*Upupa epops*)

is a gracefully-coloured insectivorous and worm-eating bird, common in South Europe, and an occasional visitor to England. It is very common in Egypt, where it frequents ancient ruins.

Next to the Small-Birds' House is one of the oldest structures in the Gardens, originally designed for Lions and Tigers, at present occupied by Bears and Hyænas. Alterations made in 1911 have provided two large enclosures with rock-work for some of the Bears, and it is hoped that the remaining portion of the old terrace will be replaced before long.

15. THE HYÆNAS' AND BEARS' DENS.

The Striped Hyæna (*Hyæna hyæna*). **The Spotted Hyæna** (*H. crocuta*). **The Brown Hyæna** (*H. brunnea*).

The Hyænas are savage and powerful brutes, now limited to Africa and Asia. Hyænas pass the day in caves, or in holes excavated by their powerful fore-feet, and at night roam in search of their food, which consists chiefly of carrion. Their jaws are enormously strong, and a large tooth at each side of the upper jaw bites against the sharp edge of a corresponding tooth on the lower jaw (carnassial teeth), so as to form a pair of shears, sharp enough to cut paper, and strong enough to split bones. Other Carnivorous Mammals have similar teeth, but in no other animal are these so perfectly adapted for cutting as in the Hyænas. In former times Hyænas were inhabitants of Great Britain, and fossil remains show that they were contemporaries of man. In the Museum at Torquay there is a fossil Hyæna jaw taken from a cave in the neighbourhood, and with a flint spear-head strongly wedged into it.

The Brown Bear (*Ursus arctos*). **The Grizzly Bear** (*U. horribilis*). **The Black Bear** (*U. americanus*). **The Syrian Bear** (*U. syriacus*). **The Isabelline Bear** (*U. isabellinus*). **The Himalayan Bear** (*U. tibetanus*). **The Japanese Bear** (*U. japonicus*). **The Manchurian or Hairy-eared Bear** (*U. piscator*).

The naming of the BEARS is still one of the doubtful points in Natural History; there is a great deal of variety in colour, size and so forth, and in a museum, where there is a large collection, the skins can be arranged in a series almost without breaks and including all the Brown and Isabelline Bears of the Northern Hemisphere. On the other hand, well-marked types are associated with particular localities, and American naturalists, who have paid special attention to the group (partly because North America possesses more different types, and more that are large and dangerous, than the rest of the world together), have formed a large number of species and sub-species. The BROWN BEAR is the common form of the Old World, extending all over Europe and Northern and Central Asia. The performing bears occasionally seen in the streets are Brown Bears. In America there



Copyright.]

Fig. 18.—The Striped Hyæna.

[Photo. by H. S. Berger, F.Z.S.]

are several kinds of Brown Bear, one of which, the KADIAK BEAR from Kadiak Island, Alaska, is the largest of living bears. The GRIZZLY BEARS have a wide range in the Rocky Mountains, and several species are recognised, of which the best known is the Silver-tip. The BLACK BEARS occur in various parts of North America, but both brown and black cubs are occasionally found in the same litter. The SYRIAN, ISABELLINE and HIMALAYAN BEARS are Old-World forms, generally recognised as distinct. All these Bears have the same general habits, feeding on berries, fruits, roots, grubs, insects, carrion and any living creatures they are able to capture. They are extremely good climbers, ascending trees in pursuit of honey. It is said that the telegraph posts in Siberia suffer much damage from Bears, which, hearing the humming vibration of the wires, think that there must be nests of wild bees in the posts.

The Malayan Sun-Bear (*Ursus malayanus*)

is a small and extremely amusing Bear from Borneo, Sumatra, and the Malay Peninsula. The Zoological Society generally possesses a number of these, for a curious reason. These little Bears, especially when they are young, are very attractive in appearance, and are bought as pets. However, they are very ill-tempered, and the owners, after a short experience of the scratching and biting of their pets, frequently offer them to the Gardens.

The Sloth Bear (*Melursus ursinus*)

is peculiar to India and Ceylon, and can be recognised by its protrusible lips, white muzzle, white claws and very long, shaggy black hair. The number of incisor teeth in the upper jaw is two less than in other Bears.

Hybrid Bears.

Two interesting hybrids shown in these dens afford further evidence of the close relationship that exists amongst the Bears. One of these is a cross between Polar and Brown Bears, and the other is three-quarters Polar Bear, being the progeny of a Polar-Brown hybrid with a Polar Bear.

The Polar Bear. See p. 11.

16. THE CAMEL-HOUSE and CLOCK-TOWER.

The Clock-Tower on the summit of the Camel-House is a convenient central point, visible from the greater part of the South Garden. The bell in the tower is rung shortly before the gates are closed for the night.

The Common or Arabian Camel (*Camelus dromedarius*)

is the well-known beast of burden of the East, and may be recognised at once by having only one hump. The DROMEDARY is only a finer and better-bred Camel, used for swifter travelling. The one-humped CAMEL is the beast used in Egypt, Africa, S. Persia, and N. India

generally, and it has been imported for similar purposes into Australia. It is accustomed naturally to a warm climate and examples brought to this country have to be acclimatised gradually.

The Bactrian or Two-Humped Camel (*Camelus bactrianus*)

has a shaggy coat that becomes very long in winter. It extends from Southern Siberia and Tartary to the Crimea, and is adapted to endure severe cold. It is the beast of burden of Central Asia, and carries tea and other merchandise from China and Tibet to the West. These Camels succeed well in the Gardens and frequently breed. They carry visitors, and although docile, are always rather vicious.

After leaving the Camels' House, the visitor will find on his left

17. THE GREAT AVIARY.

This large covered enclosure, completely re-wired and restored in 1903, is about 110 feet long, 60 feet wide, and 50 feet high. It contains many bushes and trees, and provides beautiful and almost natural accommodation for a number of birds. Some of the occupants are removed to the Eastern Aviary in winter, where artificial heat is supplied.

The Sacred Ibis (*Ibis aethiopica*). The Scarlet Ibis (*Eudocimus ruber*). The White Ibis (*E. albus*). The Glossy Ibis (*Plegadis falcinellus*). The King Ibis (*Inocotis papillosus*).

IBISES are often confused with Curlews, but may be distinguished by having a well-developed hind toe, by the stouter, although similarly curved bill, and by the head usually being bald in the adult. Ibises are closely allied to Storks, and are found all round the world, chiefly in the tropics. They fly well, nest in trees, and their food is any small living prey, from aquatic insects to grasshoppers. The SACRED IBIS was one of the best-known birds of antiquity, and had great honours paid it by the Egyptians. It is now not very common in Lower Egypt, but extends right across Africa. The SCARLET IBIS comes from tropical America, but unfortunately does not retain its splendid colours in Europe, as at each successive moult it becomes paler. The GLOSSY IBIS until recently was a native of Britain, and the examples in the Gardens breed regularly every year. It is now abundant in the lower Danube, but also occurs in the Camargue.

The Australian Sacred Ibis (*Ibis strictipennis*).

This beautiful Australian bird has bred with BERNIER'S IBIS in the Gardens.

The Great American Egret (*Ardea egretta*),

the most beautiful of the Egrets, is being ruthlessly destroyed for the sake of its plumes.

The Spoonbill (*Platalea leucorodia*)

is a close ally of the Ibis, but is to be distinguished at once by its peculiarly-shaped bill. The Spoonbill used to breed regularly in England, particularly in the Fens, and even now stray visitors occasionally arrive.

The Crested Screamer (*Chauna chavaria*).

The SCREAMERS are large South American birds, with many primitive features in anatomical structure. Each wing has two strong bony spurs, and the skin is curiously distended with air. The Screamers fly well, and swim; they are often domesticated, displaying a protective benevolence towards smaller birds.



Copyright.]

[Photo, by Henry Irving.

Fig. 19.—The Australian Pelican.

18. THE PELICANS' ENCLOSURE.

The White Pelican (*Pelecanus onocrotalus*). **The Brown Pelican** (*P. fuscus*). **The Red-backed Pelican** (*P. rufescens*). **The Australian Pelican** (*P. conspicillatus*).

The PELICANS are a small family of large birds, living in warm regions all round the globe, some being found in South Europe. They are heavy birds with long necks, large wings and short tails. They fly well, and are powerful swimmers, and live chiefly on fish. They do not dive, but take only such fish as come within reach of their long necks and bills, and they are said to fish in concert, driving their prey before them into shallow water. The bill is long and flat, and hooked at the tip; it is really a huge bag, formed by an extensible fold of thin skin stretched over the delicate, arch-like jaw-bone. The plumage is usually a vivid black and white.

19. THE EASTERN AVIARY.

This long range of buildings, facing the Great Aviary, is heated by a hot-water system, and serves as a winter home for many of the inhabitants of the Great Aviary, and also as a permanent residence for many of the larger tropical birds.

The Black Hornbill (*Sphagolobus atratus*). **The Elate Hornbill** (*Ceratogymna elata*). **Subcylindrical Hornbill** (*Bycanistes subcylindricus*).

The Hornbills are a family of large birds characteristic of tropical Africa and Asia to New Guinea, with long necks and tails and short wings and short legs (except in the AFRICAN GROUND HORNBILLS, in which the legs are longer). Like the TOUCANS, they have a large and light beak, hollow within, but, unlike the Toucans, with a helmet or casque surmounting it. The plumage is plain, but often with strongly contrasting black and white, and the presence of eye-lashes (which are, of course, modified feathers, not hairs as in mammals) gives the eyes a striking appearance. The birds nest in trees, and the female is walled up by the male in a hollow trunk with a plaster of mud and dung, depending on his care to supply herself and her brood with food until the young are fledged. In the young the helmet is not developed. Hornbills have a loud and almost barking voice. They live on fruit, insects, and any small creatures they are able to capture. The Ground Hornbills of Africa spend most of their time on the ground in search of food, and are carnivorous; they walk about in a quaint and extremely active fashion. Hornbills are easily tamed, and have much intelligence.

The Trumpeters (*Psophia leucoptera*)

form another South American group, probably closely related to the Seriemas. They have a clear and trumpetlike cry, and are frequently tamed, and kept with poultry.

The Seriemas or Cariamas (*Cariama cristata*)

form a very small group of South American birds, probably related to RAILS and CRANES. They are remarkable for their harsh and screaming cries, uttered generally in concert.

The Secretary Bird (*Serpentarius secretarius*).

These quaint, long-legged birds are allies of the Vultures, and are common in South Africa, where they are protected and frequently kept tame in homesteads. They live on small mammals and reptiles,



[Copyright.]

[Photo. by W. P. Dando, F.Z.S.]

Fig. 20. —The Secretary Bird.

killing snakes by kicking them forwards with their long legs and striking them with their knobbed wings.

Some Secretary Birds are frequently placed in the large Antelopes' Paddock (No. 13).

The Globose Curassow (*Crax globicera*). **The Razor-billed Curassow** (*C. tuberosa*).

The CURASSOWS and GUANS are large birds having somewhat the appearance of turkeys, but easily to be distinguished by the crested head and longer hind toe. They inhabit the warmer regions of the New World, and spend most of their time in trees.

The Hammer-head or Tufted Umbre (*Scopus umbretta*)

is an ally of the Herons and Storks, which gets its name from the elongated appearance of its head, caused by the bill and crest. It is an inhabitant of Africa and Madagascar, and lives on small aquatic creatures. It bred in the Gardens in 1910.



[Copyright.]

Fig. 21.--The Hammer-head. [Photo. by W. S. Berryidge, F.Z.S.]

The Vulturine Guinea-Fowl (*Acryllium vulturinum*)

is an East African ally of pheasants and fowls, sometimes called the Pintado, and is closely related to the ancestors of the Domestic Guinea-Fowl.

20. THE FELLOWS' TEA PAVILION.

This enclosure is reserved for the use of Fellows of the Society and of friends accompanying them. Other visitors may obtain refreshments at the Refreshment Rooms (No. 39).

20a. THE PAVILION POND.

This lies close behind the Fellows' Pavilion, and is quiet and well adapted for breeding.

20b. THE KEEPERS' LODGES.

The red-brick buildings on the bank above the Pavilion Pond were erected in 1904 for the accommodation of some members of the staff of the Gardens. They comprise a house for the resident head-keeper, and bachelor quarters (consisting of kitchen, club-room, dormitories and bath-room) for some of the men who sleep in the Gardens.



Copyright.

Fig. 22.—The Takin.

[Photo. by W. S. Ber ridge F.Z.S]

21. THE SHEEP-YARD.

To the right of the Pavilion Pond lies a semi-circular enclosure with rock-work, adapted for any kind of Sheep. It is at present occupied by the rarest animal in the Gardens—

The Takin (*Budorcas taxicolor*)

is a native of the almost inaccessible mountains of Eastern Tibet and Bhutan, and has very rarely been shot or even seen by Europeans. The specimen now in the Gardens was obtained in Bhutan by J. Claude White, F.Z.S., late Political Officer, Bhutan and Tibet. The Takin is probably allied to the Serow, and is a heavily-built animal, with horns like those of the Musk-Ox, and with thick, coarse fur, and a small Goat-like tail.

22. THE LLAMA HOUSE.

This House, which consists of covered stables communicating with out-door runs, lies immediately to the right of the Sheep-Yard.

The Llama (*Lama glama*). **The Huanaco** (*L. huanacos*). **The Vicuna** (*L. vicugna*).

These curious animals are the South American representatives of the Camels of the Old World, and were the only domesticated animals of the country before the Spanish conquest of Peru. Four more or less distinct forms are recognised, and of these the LLAMA and the ALPACA are supposed to be domesticated varieties of the HUANACO and VICUNA, the latter alone being found wild (on the Andes of Peru and Bolivia and in Patagonia). They are valuable as beasts of burden, and for their flesh, hides and wool. They breed freely in the Gardens, and are sometimes sufficiently tame to be employed for carrying children in the grounds. Occasionally the Llama will spit out a mass of partly-digested food or saliva at anyone who annoys it.

The visitor who is following this Guide through the Gardens should now cross the path leading downwards to the tunnel, keeping the entrance to the latter on his left, so reaching a small pond:

23. THE TUNNEL POND.

This is another quiet pond, well adapted for breeding, and contains diving birds such as Guillemots and Coots.

24. THE OTTERS' POND.

The Otter (*Lutra lutra*),

which is still common in many parts of England, is a Carnivorous Mammal related to BADGERS, WEASELS and SKUNKS, but adapted to an aquatic existence. Its close, smooth fur, the shape of its body, and

its webbed feet enable it to dive and swim with extreme agility. It overtakes and seizes fish in the water, but when it has captured its prey it brings it ashore to devour it. A full-sized male weighs about 20 pounds, and a female a few pounds less. Otters are very playful,



Copyright.]

Fig. 23.—The Otter.

[Photo, by Henry Irving.

active and restless ; they soon learn to recognise their friends, but are never quite to be trusted, and their sharp teeth are capable of inflicting severe wounds.

Immediately to the left of the Otters' enclosure is a long curved building now used for small birds. This is

25. THE CRESCENT AVIARY.

This old building was cleaned and restored early in 1911, seven flight cages being added. Various hardy birds, such as LOVE-BIRDS, COCKATIELS, BUDGERIGARS, and some rare PARRAKEETS are placed in it.

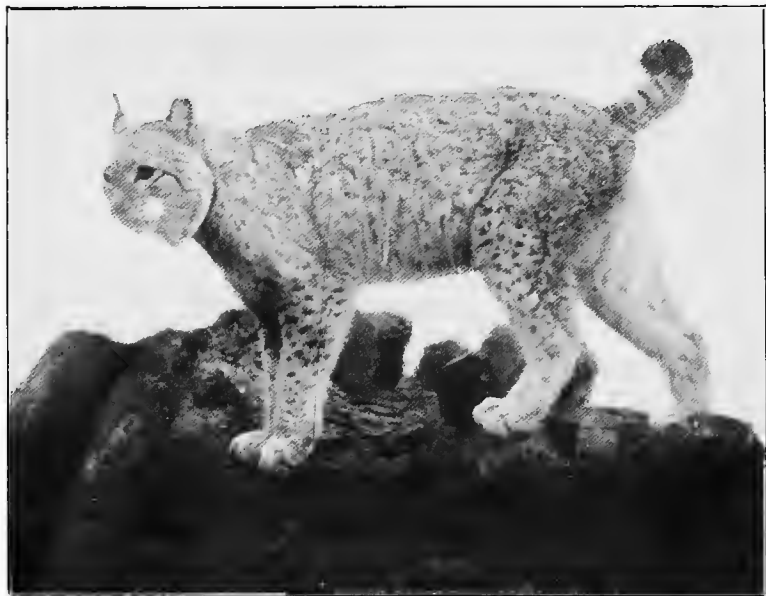
The Budgerigar (*Melopsittacus undulatus*),

Sometimes called the Australian Grass-Parakeet, is a common Aviary bird and breeds well if provided with sheltered nesting boxes and open-air flights. The normal form has a general green colour, with black markings; a yellow variety in which the black marking is very pale is also common; and there is a very rare form in which the black marking is normal, but the green or yellow is replaced by pale blue. The Society possesses all three varieties.

26. THE SMALL MAMMALS' HOUSE.

The Ocelot (*Felis pardalis*). The Serval (*F. serval*). Geoffroy's Cat (*F. geoffroyi*). The Fishing-Cat (*F. viverrina*).

Small representatives of the Felidæ, or Cat-tribe, are to be found all over the world, except in Australia and New Zealand. The Ocelot and Eyra come from S. America, the Serval from Africa, and the Chaus from Africa and India, and other species from Europe and Asia. The BRITISH



Copyright.]

Fig. 24.—The Northern Lynx.

[Photo. by W. S. Berridge, F.Z.S.]

WILD CAT (*Felis sylvestris*) was formerly abundant all over England, but is now confined to the mountainous parts of Scotland, and is very rare there. It is a large Cat, greyish in colour, with transverse black markings running from a dorsal median dark band. It is closely allied to the Spanish Wild Cat and the Egyptian Cat. The latter, sometimes called the Caffer Cat (*F. ocreata*), was the species venerated by the ancient Egyptians, and of which large numbers of mummies have been found. The modern domestic Cat has probably a multiple origin. One source is from these striped Cats of Europe and Egypt, and the pattern is still conspicuous amongst tabbies. The origin of the blotched type of tame Cat, with traces of three longitudinal spinal stripes, and a well-marked spiral pattern on the sides (described by Linnæus as *F. catus*), is unknown.



Copyright.]

Fig. 25.—The Kinkajou.

[Photo, by W. S. Berridge, F.Z.S.]

The Northern Lynx (*Felis lynx isabellinus*).

The true Lynxes comprise a number of species, the distinctions

between which are rather indefinite ; they occur in the northern and temperate regions of both the Old and New World. They are all larger than Wild Cats, and have a long and soft fur, long limbs, stumpy tails and pencilled ears. Those from more southern regions have shorter fur, and are more brightly spotted.

The Kinkajou (*Potos flavus*)

is a Carnivorous Mammal, allied remotely to the RACCOON, and a native of the forests of the warmer parts of Central and South America. It is about the size of a cat, and of a uniform yellowish-brown colour. The tail is long, tapering, and is prehensile, being used in climbing. Kinkajous are easily tamed, and make interesting pets. They feed on fruit, eggs, small birds and mammals.

The Caracal (*Felis caracal*)

is a rather tall but slender cat, with unspotted reddish brown fur lighter on the underparts, and with large tufted ears, black on the outer surface. It is a native of Africa and Asia, and is easily tamed, being used by Persians and Arabs to hunt small Antelopes and Cranes. It has bred repeatedly in the Gardens, there being usually three kittens in the litter.



Copyright.]

Fig. 26.—The Tayra.

[Photo. by W. S. Berridge, F.Z.S.]

The Binturong (*Arctictis binturong*)

is a small, dark-coloured Arboreal Carnivore, chiefly vegetarian in diet, and with a prehensile tail. It inhabits Southern Asia.

The Tayra (*Galictis barbara*)

is a small, dark-coloured Carnivore, allied to Martens and Pole-Cats. It is a native of South America.

The Feline Otter (*Lutra felina*)

is a small Otter from South America.

The Genets (*Genetta tigrina*, *G. senegalensis*, and *G. felina*).

These animals are allied to the Civets and abound in Africa. They are generally fierce and untameable, and destructive to poultry.

27. THE FOXES' AND JACKALS' ENCLOSURES.

In the gravel space in front of the Small Mammals' House, two mounds with concrete bottoms have been surrounded with railings and form burrows for Foxes and Jackals, or for other small mammals, which are generally to be seen lying in the sun on the surface of the mounds.

28. THE RACOONS' CAGES.

These cages, adapted for animals that require no artificial heat, lie a little further on than the Small Mammals' House, and contain hardy Mammals from temperate and northern regions.

The Crab-eating Raccoon (*Procyon cancrivorus*)

is a South American, semi-aquatic Mammal, allied remotely to the COATIS. It swims well, and lives chiefly on cray-fish, mussels and fish, either of salt or of fresh water.

The African Civet-Cat (*Viverra civetta*). **The Large Indian Civet** (*V. zibetha*).

The CIVETS belong to a family of Carnivorous Mammals that includes the GENETS, ICHNEUMONS and many allied forms. They are confined to the warmer parts of the Old World, and the different members receive many local designations, such as PALM-CATS, BUSH-CATS, etc. Most of them are strongly odoriferous, the odour being produced by skin glands in the region of the perineum which secrete an oily substance. The perfume obtained from the Civet was formerly much in vogue in Europe, but is now out of favour. The largest of the Civets is about as big as a Fox, and most of them have rather long, ringed tails. Some of the Civets are placed in No. 41.



Copyright.]

Fig. 27.—The African Civet.

[Photo, by W. S. Erridge, F.Z.S.]

The Canadian Skunk (*Mephitis mephitis*)

is a Carnivore about the size of a small cat, which is chiefly nocturnal and preys on mice, frogs, beetles and grasshoppers. It has beautiful fur with vivid black-and-white coloration. The offensive odour, which can be discharged at will, is produced by the anal glands.

The Pine Marten (*Mustela martes*). The Yellow-throated Marten (*M. flavigula*).

The Martens are active and very predaceous small Carnivores, abundant in Europe and Asia.

The visitor should now follow the Eastern boundary walk of the Gardens passing the Refreshment Rooms on his right; on his left he will find

29. BIRDS OF PREY AVIARIES.

These consist of a short range of covered sheds, erected in 1904, and suitable for smaller Birds of Prey, and a long range, with large flight cages, finished in 1910. Some of the inner compartments in the latter can be warmed in cold weather.

The Common Kite (*Milvus ictinus*). **The Indian Kite** (*M. govinda*). **The Black Kite** (*M. migrans*). **The Egyptian Kite** (*M. aegyptius*).

The KITE has been nearly exterminated in England, but is still common in Spain and North Africa. Kites were formerly very numerous in London. The BLACK KITE is the most abundant African form, and, like the GOVINDA in India, it is a very useful scavenger, with repulsive habits.

The Caracara (*Polyborus brasiliensis*). **The Brown Milvago** (*Milvago chimango*). **Foster's Milvago** (*M. fosteri*).

The CARACARAS, of which these birds are examples, are chiefly American, and are small and slightly-built Birds of Prey, with slender beak and talons. They devour enormous quantities of insects and small reptiles, and are very useful.

The Old-World Vultures (*Vulturidae*)

do not differ in any important structural character from the HAWKS and EAGLES, and in some cases it is difficult to draw a dividing line. Most VULTURES are large in size, possess a long neck and a bald or partly down-covered head. Their feet and talons are weaker, especially as regards the hind toe, as they do not carry prey in their feet. They are majestic and powerful in flight, rising to great heights and there soaring until they discern prey by sight. The sudden arrival of vultures at a carcass is due to the descent of those nearest having been observed by others. Vultures are most common in the warmer parts of the world, and are absent in Australia.

The Cinereous Vulture (*Vultur monachus*)

has its headquarters in the Mediterranean region, and prefers wooded country. Its plumage is brownish-black, with naked skin and cere of a livid flesh colour.

The Pondicherry Vulture (*Vultur calvus*)

is black, and is a native of India, Burma and Siam. These birds hunt in pairs, and drive all others, even Eagles, from their prey.

The New-World Vultures,

are similar in general habits to the Old-World Vultures, and, like them, with naked heads. In the New-World Vultures the gape extends very little behind the nostrils, and not up to or beyond the level of the eye as in Old-World Vultures, and the hind toe is very short. Moreover, the muscles of voice are absent, and instead of screaming, they hiss almost like reptiles.

The King Vulture (*Gyparchus papa*).

This is a very beautiful bird with glossy black-and-white plumage and brilliantly-coloured, fleshy swellings on the bill.

The Turkey Vulture (*Cathartes aura*). **The Black Vulture** (*Catharista atratus*)

are the most common scavengers of North and South America.

The Lämmergeier (*Gypaëtus barbatus*)

is a link between the Eagles and the Vultures. It is a magnificent and powerful bird, greyish-black, with white streaks and a white crown and a red circle enclosing the pupil of the eye. Dense black bristles round the base of the bill have given it the name of BEARDED VULTURE. It is found in the lofty mountains of South Europe, North Africa, West and Central Asia.

The Bald Eagle or White-headed Sea Eagle (*Haliaëtus leucocephalus*). **The White-tailed Eagle** (*H. albicilla*). **The White-bellied Sea Eagle** (*H. leucogaster*).

The SEA-EAGLES are widely distributed Birds of Prey with very large bills, sharp, and down-turned at the tip, and with the lower part of the legs bare. They haunt the coasts, usually nesting on precipitous cliffs, and live chiefly on fish. The ERNE or WHITE-TAILED SEA-EAGLE used to be fairly common in England as far south as the Lake District ; there are now left only a few pairs that breed in the West of Scotland and Ireland and in the Shetlands. The BALD EAGLE has a conspicuous white head and tail, and is the national emblem of America. Its food is chiefly fish, which it often obtains by watching Ospreys until these have caught fish and then making them disgorge their prey.

The Bateleur Eagle (*Helotarsus caudatus*).

This beautiful Eagle is found in Africa, with a white-backed variety in Abyssinia. The tail is so short that it is called the "TAILLESS" EAGLE. The legs and cere are brilliant reddish in colour, and the body is chestnut, grey and black.

The Martial Hawk Eagle (*Spizaëtus bellicosus*)

is a magnificent, although not very large Eagle from South Africa.

The Harpy Eagle (*Thrasaëtus harpyia*)

is a powerful and fierce true Eagle from South America, with a very strong beak and naked legs. It nests in high cliffs and trees, and preys on monkeys, peccaries, fawns and foxes.

Keeping to the path at the edge of the Gardens, the visitor will pass the South Gate (see p. 4) on his left, and will find a wooden gateway again on the left. This leads to

30. THE INFIRMARY AND LABORATORIES.

The Infirmary is a long, two-storied building erected in 1909. The lower floor consists of a number of isolated loose boxes suitable for any animals not of very large size, whilst the upper floor is divided into a number of wards, in each of which a number of small animals can be placed in separate cages. The whole building is designed on infirmary lines, with complete provision for disinfection, free ventilation and arrangements for the separate regulation of the temperature in each compartment. It is not open to visitors, as one of the chief objects of its construction is to secure quietness and complete freedom from disturbance for sick animals. Attached to the Infirmary is a small Operating-room for such surgical operations as are possible.

Adjacent to the Infirmary there have been erected a new *post-mortem* room and laboratories. The Society's Pathologist makes an examination of every animal that has died in the Collection. The results of these investigations are carefully recorded. Under the direction of the Society's Prosector, the bodies of animals that have died are used for anatomical research, or are prepared for Museums.

Beyond the entrance to the Infirmary, on the visitors' left, is

31. THE EASTERN PHEASANTRY.

The ordinary Game-birds, such as PHEASANTS, PARTRIDGES and QUAILS (*Phasianidæ*), are easily recognised by having the legs bare and the hind toe small and raised above the level of the other toes. The sexes are very dissimilar, the males being polygamous, and usually very beautifully ornamented. The males are extremely pugnacious, and fight to the death with one another. At the breeding season they indulge in the most extravagant displays of their ornamental plumage, but do not assist the females in incubation or in bringing up the young. The Oriental region is the richest in the world for species of this family, and contains the most beautiful forms. The best-known domestic birds belong to this family. The common Fowl is probably derived from the Indian RED JUNGLE FOWL (*Gallus gallus*); the GUINEA FOWL or PINTADE (*Numida meleagris*) is a native of Africa, where many wild species exist. The Turkey (*Meleagris gallopavo*) is a native of America, and was domesticated in Europe about 1530. The PEAFOWL is another Oriental genus, and in India the presence of wild Peafowl is supposed to indicate the proximity of tigers.

The Golden Pheasant (*Thaumalea picta*). **The Amherst Pheasant** (*T. amherstiae*).

These magnificent Pheasants come from China; but are easily acclimatised and breed well in aviaries. Hybrids between the two are common.

The Common Pheasant (*Phasianus colchicus*).

This Pheasant was probably introduced into this country by the Romans, its original home being uncertain, but the

Ring-necked Pheasant (*P. torquatus*),

which comes from the Far East, was imported towards the end of last century, and has interbred with the former so freely that pure specimens of either species are rare.

The Japanese Pheasant (*P. versicolor*)

is often called the Green Pheasant, because of the colour of its head and underparts.

The Glittering Pheasant (*P. sammerringsi*),

also from Japan, has the crown reddish-brown, whilst the lower back is maroon with gold reflections.

Reeves' Pheasant (*P. reevesi*)

is a very large bird from North and West China. It has the crown white encircled by black, the nape and throat white with a black collar, the upper parts yellow and black, the breast black, white, and chestnut, and the tail extremely long. Reeves' Pheasant has been introduced into a number of private coverts, and is an excellent table bird. It is very pugnacious, and drives other birds from the coverts.

There is another Pheasantry (No. 45) in the North Garden.

Opposite the Eastern Pheasantry lies

32. THE DEER and CATTLE HOUSE and PADDOCKS.

The Deer are a group of ruminating, hoofed Mammals, of which the most conspicuous feature is the presence of antlers (although there are some Deer without antlers). "Antlers" are outgrowths of true bone, covered during their growth with a soft, hairy skin that is sensitive and contains bloodvessels. When the growth of the antler is complete, the supply of blood to the "velvet" ceases, and that begins to peel off, leaving the hard insensitive bone of the antler exposed. Later on, by a process of absorption near the base, the antler is shed, leaving a small bony stump on which the antler of the next year is developed. With most Deer, this process of growth, maturation and shedding of the antlers is repeated each year, and when the adult antler is complicated, as in the Red Deer, the first year's growth is simple and unbranched, while the new antler of each subsequent year may gain an additional point or "tine." An antler has usually a roughened ring round the base, just above the point where it will separate when

shed ; this is called the "burr." The antler may be simple, or may send off one or more branches, in which case the main stem is called the "beam," the branch just over the forehead the "brow tine," the next branch the "bez tine," the third the "trez tine," and the mass of points towards the summit the "surroiyals."

The North American Wapiti (*Cervus canadensis*).

This fine Deer is a native of the northern parts of America, and is exceeded in size by no Deer except the Moose. Antlers have been shed in the Gardens weighing thirty-two pounds the pair. It is probable that in former times the WAPITI migrated into the New World by way of Behring Straits, and there are in Asia a number of Stags which, from West to East, approach the true Wapiti more and more closely.

The Turkestan Wapiti (*Cervus bactrianus*). **The Altai Wapiti** (*C. asiaticus*). **The Duke of Bedford's Wapiti** (*C. xanthopygus*).

The various forms of Asiatic Wapiti are closely similar.

The Persian Deer (*C. maral*)

is the Caucasian representative of the Red Deer.

The Red Deer (*C. elaphus*).

This well-known Deer of Scotland, Europe generally and Western Asia is a member of the Wapiti group, but is further removed from the American Wapiti than are the other Old-World Wapiti-like forms.

The Sambur Deer (*C. unicolor*)

of India, Burma and China is a heavy animal, standing nearly five feet high, and is representative of an Oriental group distinguished from the Wapiti group by the possession of antlers with three points and in which the beam is rounded, deeply grooved, and without a "bez" tine.

The Barasingha or Swamp Deer (*C. duvauceli*)

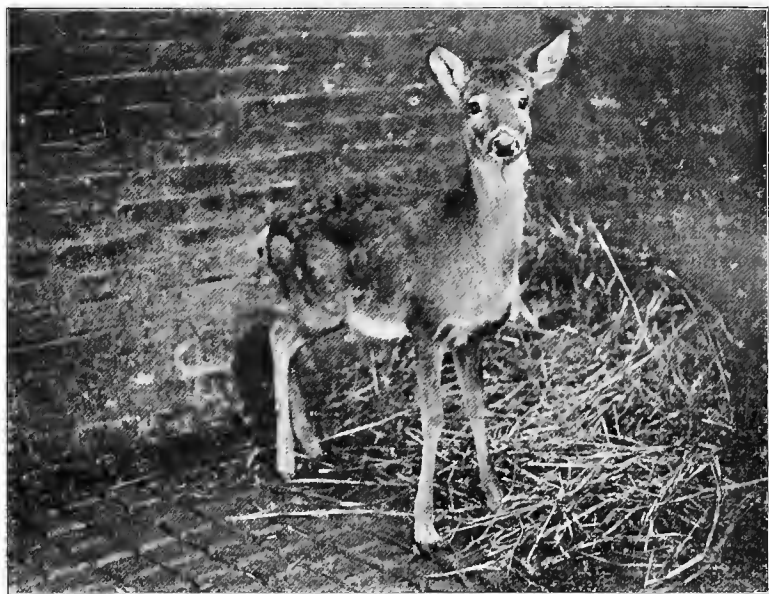
belongs to another Oriental group, in which the beam of the antler is somewhat flattened, and gives off a large "brow tine" which curves upwards ; the beam afterwards divides into two branches which again divide.

The Indian Hog Deer (*C. porcinus*)

is a heavily-built, short-legged Deer not much larger than a roe. The horns are small with not more than three points.

The Japanese Deer (*C. sika*).

The Japanese Deer, first imported to England in 1860, is a native of the Japanese Islands. It breeds readily in captivity, and has been introduced into many parks. The Society's herd is generally placed on the North Bank in the North Garden.



Copyright.]

{Photo by W. S. Berridge, F.Z.S.

Fig. 28.—Female Virginian Deer.

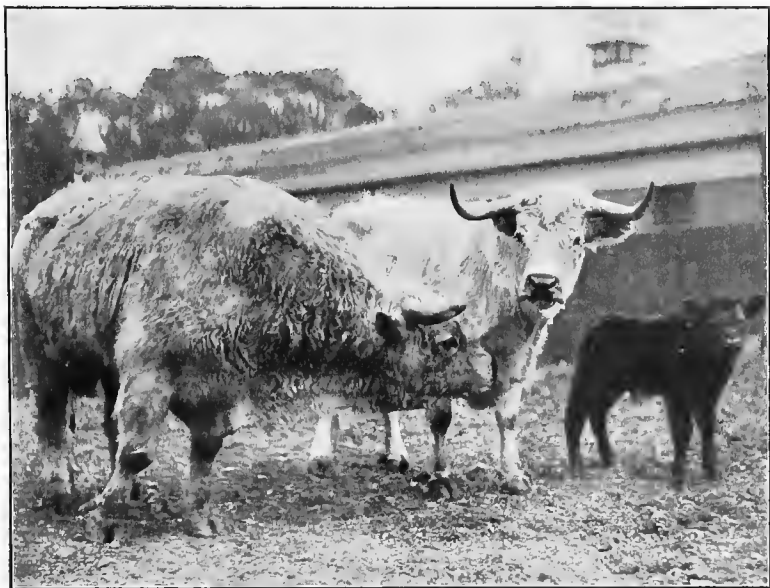
The Virginian Deer (*C. virginianus*)

is a good representative of a group of large North American deer, with elaborately branched antlers.

CATTLE.

The English Wild Cattle (*Bos taurus*).

It is very difficult to be certain how far several herds kept in private parks in England represent the original white Wild Cattle of England. Of the examples exhibited the Bull is the first calf got by a Bull that came from the famous Chartley Herd, in Staffordshire, from a Cow from Vaynol Park, Bangor. The Chartley Herd has been acquired by the Duke of Bedford, who is trying to preserve it at Woburn. The white cattle have recently bred annually in the Gardens, the calves have been black for several years, but early in 1910 a white one was born.



Copyright.]

Fig. 29.—English Wild Cattle.

[Photo by Henry Irving.

The American Bison (*Bison bison*).

The well-known Buffalo or Bison is the largest of the North American hoofed animals, and enormous herds once covered the whole pasture region of Western America. In 1867 the gigantic herd was cut in two by the building of the first trans-continental railway line. The two portions of the original herd were practically exterminated by 1884, but about twenty individuals still remained in the Yellowstone Park, and, under the strict preservation of the United States Government, the numbers are increasing. New herds have recently been founded in Canada and in New York State, examples having been obtained from the National Park and from specimens bred in captivity. There is a very good herd at Woburn Abbey, in England.

The European Bison (*Bison bonasus*),

usually called the Wisent or Zubr, but erroneously termed Aurochs by sportsmen (a name that belongs to the extinct European Wild Ox) is a forest dwelling animal, now found only in Lithuania (where it is

protected) and in the Caucasus. It is rather lighter in colour than the American form, and its forequarters and shoulders are less heavily clad with hair.



Copyright]

[Photo by W. S. Herridge, F.Z.S.

Fig. 30.—The Wisent, or European Bison.

African Dwarf Buffalo (*Bubalus planiceros*).

A fine male example of the Senegal Dwarf race of African Buffalo was purchased in 1905.

The Yak or Grunting Ox (*Poëphagus grunniens*)

is still found wild in the highlands of Tibet, but even there it is doubtful if the wild forms are genuine, as the Yak has been long domesticated by the Tibetans and is used as a beast of burden.

The Zebu (*Bos indicus*)

is the well-known humped domestic Ox of India. It is probable that the wild ancestor, probably a near relative of the parent of our own domestic cattle, is long since extinct.

Indian Domestic Cattle (*Bos indicus*, var.).

Owing to the generosity of the President, the Duke of Bedford, the Society possesses some fine examples of much prized breeds of Indian Humped Cattle, several of which have bred in the Gardens. The GUJRATI CATTLE are large, with strong conical outwardly curved horns, and very large drooping ears. The MYSORE CATTLE have smaller ears, with much larger horns directed backwards over the neck. The GYNEE CATTLE are a dwarf race with short, sharp horns.

The Gayal or Mithan (*Bibos frontalis*)

is one of the semi-domesticated native cattle of India, normally black with white legs, and black round horns. These also have bred in the Gardens.



Copyright.]

Fig. 31.—The Gujrati Bull.

[Photo by W. S. Berridge, F.Z.S.]

The Banteng (*Bos sondaicus*),

the most graceful and beautifully-coloured of the Wild Oxen, is rare

in menageries and museums, although it is widely distributed from Burma through the Malay Peninsula and Islands as far as Bali, and is occasionally domesticated.

The Indian Buffalo (*Bubalus buffelus*)

still occurs in a truly wild condition in the swamps and jungles of the Brahmaputra and Ganges, but domesticated or semi-domesticated herds are common all over India, and occur in Burma and the Malay Peninsula. The horns are flattened and angular with well-marked transverse ridges.

33. THE REPTILE-HOUSE.

Reptiles and Batrachia

are called cold-blooded, in distinction to the warm-blooded Birds and Mammals. In the latter two groups the temperature is maintained at a nearly constant and high level, whatever be the temperature of the surrounding air, whilst in the "cold-blooded" creatures the temperature rises and falls with that of the surrounding air or water, there being no protective arrangement like the fur or skin-fat of mammals, or the feathers of birds, and a less highly organised circulatory and respiratory mechanism. The curious result follows that the "cold-blooded" creatures have to be protected much more zealously against cold. Reptiles may be divided into :—

1. Crocodiles and Alligators.

These are large creatures with four limbs, powerful swimming tail, strong jaws with conical teeth, and with tough skin covered, not with ordinary scales, but with rough bony plates. They occur in fresh water in the tropics of both hemispheres, extending northwards to the United States and China.

2. Lizards.

These have more or less regular scales, and usually well-developed limbs, enabling them to run, jump, or climb. Some, however, like the BLIND-WORM, or SLOW-WORM, have the limbs rudimentary and sunk under the skin.

3. The Turtles and Tortoises.

These have no teeth, but the bony jaws are covered by horny plates, forming a strong, cutting bill. The upper and lower surfaces are protected by heavy shields formed of bony plates usually covered with horn, and under which the head and limbs may be more or less completely withdrawn.

4. The Snakes.

These have no limbs externally, although rudiments of hind limbs

are present in the PYTHONS. They are covered with scales, and glide along the ground on the ends of the ribs, which are used in progression.

Closely associated with the Reptiles are the BATRACHIA, or FROGS, TOADS, NEWTS, and SALAMANDERS. These breathe air in the adult condition, but in the young stages are fishlike, and obtain the necessary oxygen from air dissolved in water, by means of gills.

Immediately to the right on entering the vestibule are to be seen the TREE-FROGS. These are usually bright green in colour, resembling the foliage on which they sit; a rare and very beautiful variety is blue in colour. The common European form (*Hyla arborea*) is abundant in Central and South Europe, and like most of its allies has a powerful chirping voice. The GOLDEN TREE-FROG (*Hyla aurea*) is an Australian creature, distinguished by having spots and stripes of a metallic golden lustre, which contrast vividly with the bright green of the body and limbs generally. Other notable frogs and toads are the SOUTHERN MUD-FROG (*Pelobates cultripes*), the AMERICAN BULL-FROG (*Rana catesbiana*), which gets its name from its bellowing voice, the MOORISH



Copyright] —

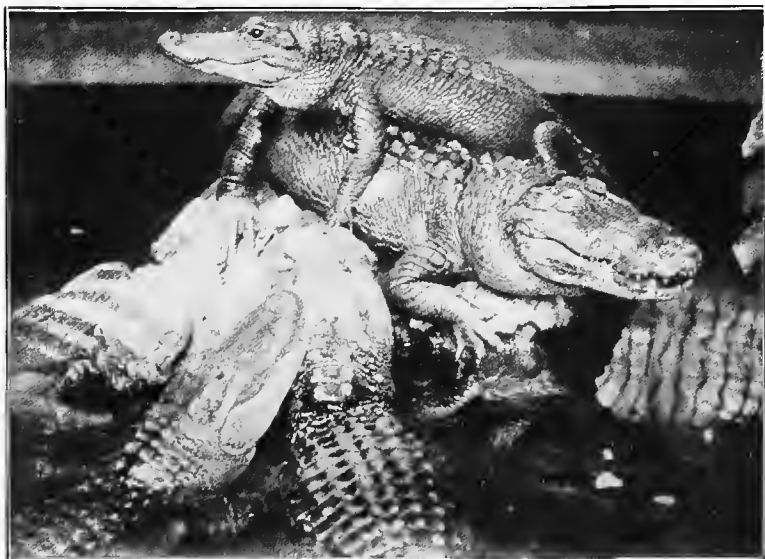
[Photo. by H. P. Dando, F.Z.S.

Fig. 32.—The Bull-Frog.

TOAD (*Bufo mauritanicus*), and the huge American GIANT TOAD (*Bufo marinus*).

There are three Basins in the Large Hall which are usually occupied by Crocodiles and Alligators. The Old-World species exhibited are the NILOTIC CROCODILE (*Crocodilus niloticus*) from Africa, the BROAD-FRONTED CROCODILE (*Osteolaemus tetraspis*) from West Africa, the INDIAN CROCODILE (*C. palustris*) and an Alligator (*Alligator sinensis*) from China. The New World is represented by the MISSISSIPPI ALLIGATOR (*Alligator mississippiensis*) from Southern N. America, the CAYMAN (*Caiman latirostris*) and the ROUGH-EYED CAYMAN (*C. sclerops*) from South America.

Some of the small cases fronting the visitor on entering the Large Hall contain examples of interesting Amphibia. The SIREN (*Siren lucertina*) of the United States preserves the long feathery external gills of the young state. In the adjoining case is the AMPHIUMA of North America, in which the limbs are practically absent and from which the larval gills have disappeared. Both are eel-like in shape. The colourless, blind PROTEUS (*Proteus anguinus*) comes from pools in deep underground caves in Austria. The Japanese FIRE-BELLIED



Copyright, 1914,

[Photo. by W. S. Bernidge, F.Z.S.]

Fig. 33.—Group of Alligators.

NEWT (*Molge pyrrhogaster*) is a strikingly beautiful creature. The SPANISH PLEURODELE (*Molge waltli*) is a fine Newt with very large fore-limbs; the males assume, when at rest, a curious kangaroo-like attitude. One of the three tanks in the Central Hall contains examples of the extraordinary SMOOTH-CLAWED FROG (*Xenopus laevis*). In this striking creature, which is a native of East and South Africa, the hind limbs are unusually strong and support ample webs on the long, thin toes, which give the feet the appearance of half-opened umbrellas.

Ranged along the side of the Central Hall, to the right of the entrance, are some of the most extraordinary forms of Lizards. There are several species of CHAMÆLEONS (of which the most common is the North African and West Asian *Chamæleon vulgaris*). These have grotesque heads, large, with peculiar angles and corners, often helmeted, and with movable, protruding eyes that can be turned in opposite directions, enabling the creature to see all round it without moving its head or body. The feet are equally peculiar, being split in two equal portions, of which one is turned outwards and the other inwards. Chamæleons change their colours, either at will or involuntarily, turning even black when angry or frightened.

The Derbian Zonure (*Zonorus gigauteus*)

is a grotesque form, with the scales of the head and body projecting like the scales of a fir-cone or pine-apple. It is a South African creature.

The Tuatera Lizard (*Sphenodon punctatus*).

This very primitive creature is a native of New Zealand, and differs so much from Lizards that anatomists place it in a special group. It possesses a well-formed vestige of the median, or parietal eye.

The Gecko.

These peculiar little Lizards have a wide distribution in the warmer parts of the Old and New Worlds. Below the tips of the fingers and toes are rounded pads of brushlike structure which enable the Geckos to run over almost any surface in any position, even on the ceiling. They abound in houses, and are protected because of their use in devouring insect pests. Their scales are small, so that the body is very flexible, and their large eyes fit them for seeing in the dusk.

The Glass Snake (*Ophiosaurus apus*)

is a limbless Lizard from South Europe, which, like the English BLIND-WORM (*Anguis fragilis*), is often mistaken for a Snake.

Along the right-hand side of the Central Hall other interesting Lizards are exhibited.

The Heloderm or Gila Monster (*Heloderma suspectum*)

is a poisonous Lizard from Mexico and Arizona. Its teeth are grooved and the poison is secreted by a set of labial glands. The coloration is blackish-brown with yellow and orange.

The Skinks

have a squat and plump shape, and their polished scales give them a smooth appearance. Some of the most interesting forms are natives of Australia, for instance the BLUE-TONGUED LIZARD (*Tiliqua scincoides*), the BLACK-AND-YELLOW CYCLODUS (*T. nigro-lutea*) and CUNNINGHAM'S SKINK (*Egernia cunninghami*). All these have pigmented tongues.

The Iguanas

are large shapely Lizards good to eat.

The Tuberculated Iguana (*Iguana tuberculata*)

of Central and S. America has a large head and neck studded with wart-like scales, one of which on each side of the head is very large and bright coloured. Folds of the skin, not unlike the dewlap in cattle, hang down from the neck and can be inflated. From the back of the head to the end of the tail a crest-like fringe hangs over the compressed body.

The Spiny-tailed Mastigure (*Uromastix acanthinus*)

is a large lizard from North Africa.

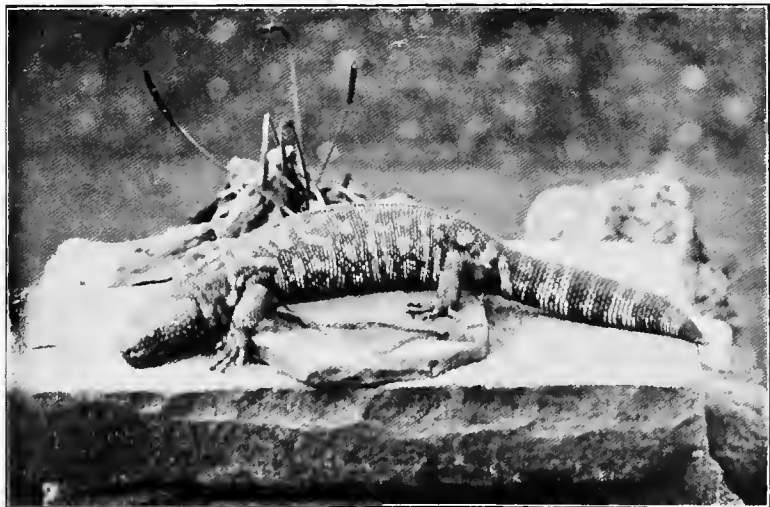


Fig. 34.—Heloderma Lizard.

[Photo. by H. P. Dando, F.Z.S.]

The Monitors or Lace Lizards

include the largest of living lizards. GOULD'S MONITOR (*Varanus gouldi*), from Australia, may attain the length of six feet.

The Monitors may be distinguished from the Iguanas by the flatter body devoid of a crest, and by the thick and powerful tail, which is used as a weapon for defence.

The Australian Mud-Fish.

In the corner, at the end of the right-hand side of the Central Hall, is a large tank occupied by examples of the AUSTRALIAN MUD-FISH (*Ceratodus forsteri*). These curious animals, although true fishes, are in a sense a connecting link with higher forms of life. The air-bladder is converted into what is practically a lung, and when the tropical rivers in which these creatures live dry up in the hot season, the Mud-fish preserve their lives in cocoons of dry mud in the river bottom. While secluded in these they breathe air like a frog, gulping it down into the air-bladder, which opens into the gullet.

Pythons and Boas.

The members of this tribe, although not poisonous, are dangerous. They may reach a huge size, and kill their prey, which consists of warm-blooded animals, by constriction. The ANACONDAS, allies of the Boa, like most snakes, are fond of water, and are usually to be seen immersed in their tanks with only the tip of the head protruding. The designs and colour patterns of the skin vary greatly for different species, but the arrangement is generally like that of mosaic work. The RETICULATED PYTHON (*Python reticulatus*) from the East Indies attains a length of over twenty feet. The INDIAN PYTHON (*Python molurus*), from India, China, and the Malay Peninsula, is a near relative of the former. The COMMON BOA (*Boa constrictor*) is the well-known South American form. The PARAGUAY ANACONDA (*Anaconda notæus*) is a rarer snake, very fond of water, and with a most conspicuous leopard-like pattern consisting of black spots on a sulphur-yellow ground.

The walls of the Central Hall to the left of the entrance are occupied by cases in which smaller snakes are kept; here are to be found most of the poisonous serpents in the collection. Turning to the left from the entrance, the visitor will find first of all the VIPERINE SNAKE (*Tropidonotus viperinus*), a Snake from South Europe, superficially resembling the Viper, but, like its ally the English Grass Snake, quite harmless. Here also, with other harmless Snakes, are the vividly-coloured CORN SNAKE (*Coluber guttatus*) of North America, and the extremely beautiful DARK-GREEN SNAKE (*Zamenis gemonensis*) of Europe and West Asia.

A very interesting group of Snakes form the genus ERVX, close allies of the Boas and likewise harmless, others more or less poisonous.

They have short and rounded tails and equally blunt heads. The natives in India believe that they can see with both ends of the body, and this belief is due to the presence of a bright red eye-like spot at each side of the end of the tail.

The Vipers or Adders

are truly poisonous Snakes, and have the further peculiarity that the eggs, instead of being laid, are hatched within the body, the young emerging in an active state. Most of them have flat, triangular heads, the shortening of the jaw giving a mechanical advantage in "striking." The bone supporting the poison-fangs is hinged, so that the fangs may be bent backwards when not in use.

The Common Viper (*Vipera berus*),

found in many localities in England, is the only venomous Snake in the British Isles. It may be recognised readily by the diamond-shaped or zig-zag pattern running along the back. The COPPER-HEAD (*Ancistrodon contortrix*) is a common North American snake. The CAPE VIPER (*Causus rhombeatus*) is a smaller form more resembling harmless snakes.

The Rattlesnakes

are deadly serpents that derive their name from a peculiar arrangement of some of the terminal scales on the tail. These are dry, hollow structures, filled with air, and when the tail is vibrated emit the rattling, warning sound. The Rattlesnakes inhabit North and South America. A well-known form is the HORRID RATTLESNAKE (*Crotalus horridus*).

The Puff Adder (*Bitis arietans*),

from Africa and Arabia, common in South Africa, is one of the most venomous and dangerous of Snakes. It is conspicuously marked, and has a short, thick body with a tapering tail. The name comes from the habit possessed by the Snake of inflating its body with air.

The Indian Cobra (*Naia tripudians*)

is a very deadly and aggressive Snake, always ready to strike on the smallest provocation. Before striking it bends its neck in a swan-like fashion, and raises the neck-ribs to form the spectacle-marked hood characteristic of the Cobras.

34. THE TORTOISE=HOUSE.

The Charles Island Tortoise.

The largest of these monsters is about three and a half feet long and two and a half feet high, and weighs over seven hundredweight. It must be over a century old. Similar forms of these massive and clumsy creatures, which are purely herbivorous, formerly inhabited the Seychelles Islands, Mauritius, and the Galapagos Islands, but are now

very scarce. Many species of inferior size live in other parts of the world, and there are one or two small species found in South Europe, and often sold as pets. The barrel-shaped back is called the carapace, and is built up of the ribs, which are flattened out to join each other and the joints of the backbone. The members of this group are able to draw the limbs, head, and tail completely inside the shell, therein differing from the Turtles.

Bell's Cinixys (*Cinixys belliana*)

comes from Tropical Africa, and is remarkable for the crinkly plates of the dorsal shield, which again turns down and under the posterior end, like the tail of a Crab.

Opposite the Tortoises and to the right of the entrance, the building is arranged with little ponds in which the Turtles are placed, as well as some of the Tortoises that lead a purely aquatic life.

The European Pond Tortoise (*Emys orbicularis*). **The Amboina Box Tortoise** (*Cyclemys amboinensis*). **The Painted Terrapin** (*Chrysemys picta*). **The Alligator Terrapin** (*Chelydra serpentina*).

These are examples of a division of semi-terrestrial Tortoises (*Emydidæ*). The dorsal shields are flattened, and the ventral shields are larger, and are still fused with the dorsal shield by bone cartilage. The animals can withdraw their extremities into the shell altogether, and the head by an S-shaped curving of the neck. Most of them live in fresh water, and feed on a mixed diet. The European Pond Tortoise is common in the South of Europe.

There is a fine collection of Terrapins belonging to the quite aquatic family *Chelydridæ*. These are all excellent swimmers, and carnivorous in diet. The ALLIGATOR TERRAPIN, from North America, has a long thick neck and tail, on account of which it has been likened to the Alligator.

The Matamata Terrapin (*Chelys fimbriata*). **The Long-necked Chelodine** (*Chelodina longicollis*).

These reptiles belong to a quite distinct family, the *Chelydridæ*, in which the neck bends laterally. The MATAMATA TERRAPIN, from Tropical South America, is remarkably flat, and has ribbon-like fringes on the head, neck, and tail, and these, together with its dull colouring, make up a general resemblance to floating water-weeds.

The Gangetic Trionyx (*Trionyx gangeticus*). **The Nilotic Trionyx** (*T. triunguis*). **Prickly Trionyx** (*T. spinifer*).

These reptiles belong to a quite distinct family, the *Chelydridæ*, of aquatic habit. In them the carapace is relatively small, and there are no horny plates lying on the bony shields, the latter being composed of very dense bone deeply pitted and sculptured, and covered with

soft skin. The breastplate is generally movable, being connected with the carapace, either by soft tissue or loosely dovetailed into it. The jaws have fleshy lips and sharp, cutting edges.

A certain number of tropical fish are placed in this House, as the temperature is suitable for them.

The Climbing Perch (*Anabas scandens*).

A fish that climbs trees seems a rather unusual creature, but this curious Perch, or other species closely similar, is found in fresh water in Tropical Africa and in the islands of Malaysia. The fins have many hard spines, the scales of which are dented and rough, and by means of these the fish are said to be able to climb into the branches of trees.

The Saccobranch Cat-Fish (*Saccobranchius fossilis*)

is a small Cat-fish from India, the skin of which is perfectly naked. Round the mouth there is a number of long delicate feeler-like tentacles which are very sensitive.

The Snake Fish (*Polypterus senegalensis*).

These curious African fish are survivors of a very ancient type, the fossil remains of which are very numerous. The scales are hard, bony structures fitted together like the tiles on a roof. The bodies, however, are very flexible. At the breeding season they construct curious nests, and when the young are hatched they resemble tadpoles rather than young fishes.

" Millions " Fish (*Girardinus poecilioides*).

These hardy little fresh-water fish have close allies in many tropical countries. This species is found in Barbados, where it is very abundant and devours voraciously any small creatures living in fresh water. In Barbados it is encouraged in garden ponds and tanks, and as it devours mosquito larvæ is believed to have a large share in keeping down malaria. Attempts are being made to introduce it into other localities where the abundance of mosquitos spreads malaria.

On leaving the Reptiles, the visitor should pass round the nearest end of the Deer and Cattle House by a path sloping downwards. On his left are the Southern Paddocks, and on his right he will find the new Paddocks for Cattle, and on passing these and turning up to the left he will find

35. THE DUCK PONDS.

These serve for the accommodation of a number of species of Waterfowl kept separate for breeding purposes.

The Common Sheldrake (*Tadorna cornuta*)

ranges from Britain, across Europe to Japan. It is a handsome bird with red bill, pink feet, and a glossy green head. It frequents the coasts and muddy flats, and not infrequently appears in poulterers' shops in winter.

The Variegated Sheldrake (*Tadorna variegata*)

comes from New Zealand, and is black in colour, relieved by grey, brown, and green. The head of the female is white.

The Ruddy Sheldrake or Brahminy Duck (*Tadorna casarca*).

These handsome Ducks are goose-like in habit, grazing on corn and grass. They are natives of South Europe, North Africa, and Temperate Asia, but winter in India and Burma. The male has an orange-brown body with a black collar in summer; the female is much more like the male than is the case in most Ducks, in which, as contrasted with Geese, the sexual differences are very great.

The Australian Sheldrake (*Tadorna tadornoides*)

has the head black, that of the female having some white round the eye, the chest ruddy-brown, the body black, with a large conspicuous white patch on the wings.

The Rosy-billed Duck (*Metopiana peposaca*)

is a native of swamps in the pampas of South America. The sexes are very different in appearance, the male being chiefly black and the female brown, the bill being of a conspicuous carmine in the male and lead-grey in the female.

35a. THE WADERS' AVIARY.

This wire-covered Aviary contains a large pond, with a sandy bank, a pebble bank, deep water for water-lilies, and a mud-bed for bulrushes. It contains a number of wading birds, such as PLOVERS, MOORHENS, STILTS, KNOTS, RUFFS, GODWITS and TURNSTONES, KINGFISHERS, and many small, chiefly British, perching birds.

On the other side of the path is a large enclosure,

36. THE THREE-ISLAND POND.

In this, under almost natural conditions, a number of beautiful water-fowl are kept. Many of these breed, and the Pond is one of the most delightful exhibitions in the Gardens. The BLACK-NECKED SWAN (*Cygnus nigricollis*) bred here for the first time in Europe. The cygnets of this Swan are milky-white in colour, but the black on the neck very soon begins to appear, and the adult plumage is assumed at an earlier age than is the case in most Swans.

THE KING'S AFRICAN COLLECTION, 1911.

The main walk between Nos. 35 and 36 leads into a part of the Gardens stretching towards the Monkey House, which during the summer of 1911 will be occupied by a collection of African animals, pre-

sented to H.M. The King, who is Patron of the Society, and deposited at the Gardens. The collection will be fully labelled, but its exact contents were not known when this edition of the Guide had to be printed. From the point of view of its native animals, Africa is divided by the Sahara and Nubian deserts, which form a very efficient barrier to the passage of the animals, into a smaller Northern portion and a larger Ethiopian region. The Northern portion contains animals not unlike those of Europe, North Asia, and North America, including deer, sheep and goats, and bears. The Ethiopian region possesses animals closely similar to those found as fossil in India, and it is possible that in past times there was an extensive migration of such animals into Ethiopia, through Arabia. The chief features of Ethiopia are its Man-like Apes (see p. 22), Monkeys (p. 17), Lemur-like forms (p. 21), Antelopes (p. 33), its Elephants (p. 101), Rhinoceroses (p. 101), Hippopotamuses (p. 105), and Giraffes (p. 106). After visiting the African collection, the visitor should go back to its entrance and turn along the walk between the Three Island Pond and the Great Lawn, noticing a fine piece of sculpture by a Dutch artist, lent to the Society by a Fellow. On his right, at the end of the Lawn, is an enclosure.

37. THE SQUIRRELS' TREES.

This enclosure, consisting of a grassy bank, with trees and a small pond, was surrounded with a fence in 1905, and prepared for a colony of Squirrels.

The Grey Squirrel (*Sciurus cinereus*).

These squirrels, rather larger than the English Squirrels, are natives of North America, and for long have been familiar pets in the New York Central Park. The Duke of Bedford, President of the Society, has succeeded in establishing them in the woods at Woburn Abbey. A number, presented by the Duke to the Society, have been placed in this enclosure, and, after becoming familiarised with visitors, have been allowed access to the Gardens, and have now established themselves there and in Regent's Park, breeding freely.

The Ursine Tree-Kangaroo (*Dendrolagus ursinus*).

Almost every group of mammals contains members that have become adapted to life in trees, but Kangaroos seem peculiarly unfitted for such an adaptation, and although the Tree-Kangaroos climb extremely well, they do so in a curious and almost laborious way that is very interesting to watch. Tree-Kangaroos are found in the tropical forests of New Guinea and North Australia, and the Society's specimens are to be found in the Squirrels' Enclosure only in summer, being removed to a warmed house (usually No. 47) in winter.



Copyright.

[Photo. by W. S. Berridge, 1 Z.S.]

Fig. 35.—Tree-Kangaroos.

38. THE DIVING BIRDS' HOUSE.

This House, erected in 1852 for the purpose of exhibiting Fishes and the lower aquatic animals in the living state, was one of the first public Aquaria in Europe. It now contains various small fish, Diving Birds (such as PENGUINS, RAZOR-BILLS, DARTERS and CORMORANTS), which are fed at noon and 5 p.m.

The Boat-bill (*Cancroma cochlearia*)
is a South American Night-Heron which has received its popular name from the extraordinary shape of the bill.

A number of fresh-water fish, including Catfish, Salmon, Trout, Gray-



Copyright.]

Fig. 36.—The Boat-bill.

[Photo, by W. F. Pando, F.Z.S.]

ling, Orfe, Carp, and Pike are placed in the tanks round the sides of the House.

39. THE REFRESHMENT ROOMS.

The Refreshment Rooms in the Gardens are let for a term of years to Messrs. Spiers and Pond, who are bound by their agreement to supply first-rate articles at a reasonable cost. The Contractors have space for large parties, and give special terms for these on application to the Manager at the Refreshment Rooms. The Tea Saloon lies between the Refreshment Rooms and the Eagles' Aviaries, and is set apart for providing substantial teas at a fixed price. Ordinary afternoon tea is served in the Central Rooms, or, in favourable weather, in the open-air beside the Lawn.

40. THE EAGLES' AVIARIES.

The Golden Eagle (*Aquila chrysaetus*). **The Wedge-tailed Eagle** (*A. audax*). **Verreaux's Eagle** (*A. verreauxi*).

The Golden Eagle inhabits the mountainous and forest regions of Europe, from Lapland to the Mediterranean, and extends through Asia to Kamschatka. It is found in India, and is sometimes trained in Central Asia. It is strong and courageous, and will attack the wolf and the stag, and not infrequently it is dangerous to man. In this country it is found practically only in the Highlands of Scotland, although stragglers appear further south. The WEDGE-TAILED EAGLE is the common Eagle of Australia. VERREAUX'S EAGLE, a handsome bird with black-and-brown plumage, is a native of mountainous districts in South Africa.

THE BAND-STAND.

A military band plays selections of music on Saturdays from 4 to 6 p.m. in the summer months.

THE KIOSK.

This is used for the sale of photographs and pictorial post-cards of the animals exhibited in the Gardens.

The visitor, who has now seen the principal objects of interest in the South Garden, should pass through the Tunnel, under the public road, into the Middle Garden. He will find it most convenient at once to pass over the Canal Bridge to the North Garden, leaving the Middle Garden for the last part of his tour.

NORTH GARDEN.

Immediately after crossing the Canal Bridge, the visitor will find in front of him a red-brick structure, formerly the Northern Aviary. This is now

41. THE CIVETS' HOUSE.

This House contains a number of small mammals, chiefly carnivores, such as Badgers, Racoons, Ratels and Civets. (See p. 53.)

The Ratel (*Mellivora ratel*). **The Indian Ratel** (*M. indica*).

The RATELS are Carnivora, allied to WEASELS, and are found in India and Africa. They eat rats, frogs, white ants, and various insects; but in the North of India they are accused by the natives of digging out dead bodies, and are known as "Grave-diggers," an accusation certainly unjust. Ratels have short, rather heavy bodies, and have a coloration that is very unusual, the upper part of the body being ashy-grey, and separated from the lower part, which is black, by a white band. They are very active and playful, but bite on little provocation.

The Tasmanian Devil (*Sarcophilus satanicus*)

is a small but ferocious carnivorous Marsupial from Tasmania. These



[Copyright.]

[Photo. by H. S. Berridge, F.Z.S.]

Fig. 37.—The Tasmanian Devil.

animals are very noisy and quarrelsome, but are unintelligent and stupid, although from their activity and fierceness they do much damage to farm-stock. The prevailing colour is black, and they live in burrows.

The Common Badger (*Meles meles*). The American Badger (*Taxidea taxus*).

The BADGERS are powerful Carnivorous Mammals found in many parts of the world, and with the same general habits. They burrow freely and are very wary, but when dislodged are fierce and extremely capable of defending themselves. Since the "sport" of badger-baiting has been discredited, badgers are increasing in many parts of the country.

To the right of the Canal Bridge, opposite the Civets' House, is a Paddock on the Canal Bank, containing examples of

The Indian Muntjac (*Cervulus muntjac*).

The Muntjacs, or Barking Deer, are small, Asiatic animals, primitive in type, and with short, two-spiked antlers mounted on bony pedicles.



Copyright.]

[Photo. by W. S. Berridge, F.Z.S.

Fig. 38.—The Indian Muntjac.

42. THE CRANES' PADDOCKS.

The CRANES, of which not many species are known, occur in all parts of the world, except South America, and are probably closely related to Rails. Cranes are graceful and dignified birds, tall and of erect carriage, and their plumage, which often displays long ornamental feathers, is striking, although the colours are only grey, white, and black. The head in the adult is usually naked, the skin being red. Cranes are generally migratory and gregarious, and their food is chiefly vegetable. They have a loud voice with trumpet-like notes, and the windpipe is sometimes curiously twisted inside the keel of the breast-

bone, as in many Swans. In the breeding season they perform extraordinary dances. In some superficial respects they are like Storks, but may be distinguished easily from these birds by their loud voice, by the short, useless hind toe, and by the corner of the mouth not reaching the level of the eye.

The Cranes not placed in the Ostrich House (No. 9) are to be found here.

The Demoiselle Crane (*Anthropoides virgo*)

inhabits South Europe, and extends to Central Asia as far as North China, in winter migrating to Northern Africa and India. It is silvery grey, with white ear tufts, and has no bare skin about the head. This Crane does immense damage to crops in India.

The Stanley Crane (*Anthropoides paradisea*)

is a handsome South African bird, common in the Transvaal, where it is generally to be seen in pairs, stalking about the open flats in search of insects, but also devouring roots and seeds.

The Grey-necked Crowned Crane (*Baelearica regulorum*).

This very beautiful bird also comes from South Africa ; it has obtained its name from the decoration of the head, which consists of a glossy cap of short feathers with the appearance of velvet pile, and a tuft of hair-like bristling plumes. The general colour of the neck and back is dark grey ; the bare patches on the cheeks are white with a small patch of scarlet at the summit, and occasionally with a diffused pinky blotch on the lower part.

The West-African Crowned Crane (*Baelearica pavonina*). **The White Nile Crowned Crane** (*B. cecilia*).

These Crowned Cranes differ from the Cape Crowned Crane chiefly in the darker colour of the neck and back, and in having the cheek patches white above and red below.

The Australian Crane (*Grus australasiana*)

is a fine Crane allied to the Indian Crane. It is called the " Native Companion " in Australia, and is greyish in colour with olive-green bill, and a bright coloured patch across the head.

The Sarus Crane (*Grus antigone*)

is a noble Asiatic species, peculiar to India. It is nearly as tall as a man, and is French-grey with a red head. It is less vegetarian in its diet than most Cranes.

The Asiatic White Crane (*Grus leucogeranus*)

is nearly as large as the Sarus Crane, and is white in plumage with black primary quills. It is partly aquatic, and does not damage crops.

The Common Crane (*Grus communis*)

is the most widely distributed of all the Cranes, and occurs throughout Europe, Northern Asia, and Africa north of the Sahara. It visits India in winter. It feeds chiefly on grain, and does great damage to crops.

The Manchurian Crane (*Grus japonensis*)

is a native of Manchuria, but is frequently kept in captivity in Japan, and is the well-known subject of Japanese designers.

The Sandhill Crane (*Grus mexicana*)

is the common Crane of N. America, grey with a brownish wash.

The Great Bustard (*Otis tarda*). **The Australian Bustard** (*Eupodotis australis*). **The Little Bustard** (*Otis tetrax*). **Macqueen's Bustard** (*Houbara macqueni*).

Bustards are probably allied to the Cranes and Trumpeters. They



Copyright]

Fig. 39—Giant Bustards.¹

[Photo. by W. S. Berriage, F.Z.S.]

are omnivorous birds, feeding on juicy plants; berries, and seeds, and all kinds of grasshoppers and small animals. The more delicate Bustards are placed in the Eastern Aviary in winter.

The Giant Bustard or Gom-Paauw (*Otis kori*)

is the largest and finest of the Bustards. It is a native of South Africa, and is called the Gom-Paauw, or Gum Turkey, from its love of Mimosa gum. A fine pair is exhibited in the King's African Collection (p. 73).

42a. THE MOUSE HOUSE.

The American Flying Squirrel (*Sciuropterus volucella*).

The FLYING SQUIRRELS, though incapable of true flight, can float through the air for considerable distances by the aid of a parachute-like flap of skin connecting the fore and hind limbs. Their habits and food are similar to those of the true Squirrels, but they are more beautifully coloured and more nocturnal in habit.

The Palm Squirrel (*Sciurus palmarum*)

is a common Indian ally of our native squirrel, and is pretty and easily tamed.

The Jerboa (*Jaculus orientalis*)

is the best-known representative of a small group of Rodents characteristic of the deserts of the Old World, and especially of Africa and South-Western Asia. They have very long hind limbs and tails, and progress by long jumps; they are affectionate and easily tamed.

The Dormice

are small furry rodents, limited to the Old World.

The Meerkat (*Suricata suricatta*). The Bushy-tailed Meerkat (*Cynictis penicillata*).

These curious little Carnivores are allied to the Ichneumons and Mongoose, and are natives of South Africa, where they live in burrows in the open plains, forming extensive colonies.

The Cuscuses, or Phalangers,

are frugivorous and vegetarian Marsupials, generally arboreal and nocturnal in habit. They occur in Australia and New Guinea and are soft, furry animals, and many of them, such as the SQUIRREL-LIKE FLYING PHALANGER (*Petaurus sciuroides*), are capable of gliding, parachute-like flights, employing a broad flying membrane which extends from the outer side of the fifth finger to the ankle.

The Spotted Dasyure (*Dasyurus maculatus*). **Maugé's Dasyure** (*D. viverrinus*).

The smaller Dasyures are predaceous Marsupials, with grey or brown fur, profusely spotted with white. They are mostly natives of Tasmania and take the place of animals like Civets, Cats and Weasels in other parts of the world. They hide during the day, and at night come out to hunt the birds and small mammals on which they live.

The Indian Mongoose (*Herpestes mungo*). **The Egyptian Ichneumon** (*H. ichneumon*). **The Dusty Ichneumon** (*H. pulverulentus*). **The Banded Ichneumon** (*Crossarchus fasciatus*).

The Ichneumons are a group of small Carnivores spread over Africa and Asia. They are clever, intelligent and easily tamed. They are all very fond of eggs, and deserve protection because of the number of eggs of Reptiles that they destroy. The Indian Mongoose is well known from popular stories, and is an expert Snake killer. The Egyptian Ichneumon, which is also found in the South of Spain, was held sacred in ancient Egypt. It is abundant on the Nile, where it is reputed to destroy large numbers of Crocodiles' eggs.

The Dasyurids, Pouched Mice and Bandicoots belong to a division of Marsupials known as Polyprotodonts, in all of which the incisor teeth are numerous. The Opossums of America belong to the same group.

The visitor, pursuing the walk along the North Garden, will pass on his right the North Entrance (p. 4), and then come to an iron and glass building. This is

43. THE INSECT-HOUSE.

A range of cases on the south side of the building is devoted to some of the finer species of silk-producing MOTHS of the family *Saturniidae*, such as the GREAT ATLAS MOTH (*Attacus atlas*), the TUSSEH SILK MOTH (*A. mylitta*), the AILANTHUS SILK MOTH (*A. cynthia*), and the CECROPIAN SILK MOTH (*Samia cecropia*). The eggs, caterpillars, cocoons, and perfect insects are shown as far as the season permits. Other cases contain examples of some of the finer European and Tropical Butterflies. From time to time other interesting invertebrate animals are displayed, in particular, SPIDERS, SCORPIONS, CENTIPEDES, and MILLIPEDES.

The African Snail (*Achatina fulva*).

These large land Snails are natives of Madagascar and Africa, but have been introduced and have established themselves in Calcutta.

Bird-Eating Spider (*Avicularia aviculaari*).

This species lives in South America. It belongs to a family containing the largest Spiders known, some of them rivalling a rat in size. They occur in all tropical countries, and are frequently called Taran-tulas. They lurk by day in burrows or hollow trees, and issue forth at night in search of food, preying upon insects or young birds, which they take from the nest. By means of their sticky feet they can climb even vertical plates of glass. Their bite is poisonous, and the bristles covering their body and limbs irritate the human skin like a nettle sting.

Stick-Insects and Leaf-Insects (*Phasmidæ*)

are allies of Cockroaches, but are so much modified to suit their surroundings, as to be amongst the most curious of natural objects. Some of them look like stems of grass, others like moss-covered bark, others like green leaves. The females are most highly protected by resemblances to natural objects amongst which they live, whilst the males are more active and less protected. They occur in many parts of the tropics and are vegetable feeders. The remains of gigantic extinct members of the group have been found, with a spread of wings about two and a half feet.

The Insect-House has a set of large cages in which delicate birds or mammals are sometimes placed.

The Edible Flying-Fox (*P. edulis*). **The Collared Fruit-Bat** (*Cynonycteris collaris*).

The Bats (*Chiroptera*), a set of Mammals at one time included with man and monkeys in the Primates, but now known to be distinct, occur all over the world. The smaller forms are chiefly insectivorous, a few like the Vampire are blood-sucking; most of the larger tropical forms, such as the Flying-Foxes, are fruit-eating, and do great damage to crops. They have occasionally bred in the Gardens. They spend most of the day suspended by their legs in a dark corner of the cage enfolded in their membranous wings.

Beyond the Insect House there will be found

44. THE OWLS' AVIARY.

The OWLS (*Striges*) are in their habits nocturnal representatives of the Eagles and Vultures, and for long the former were called Nocturnal Birds of Prey, the latter Diurnal Birds of Prey. It is now known, however, that Owls and Eagles belong to remote groups of birds, the Eagles and Vultures being associated by their structure with such forms as Storks, while the Owls are more nearly allied to the Goatsuckers. In appearance, Owls are unlike any other birds. The plumage, which

is generally mottled drab or chestnut in colour, is very soft and full, especially about the head. The eyes look forwards, and are each surrounded by a disk of bristly feathers, while the whole face is enclosed in a ruff. The Owls, unlike all other Birds of Prey, perch with the outer toe turned backwards, and the hind toe and claw are conspicuously small. The soft plumage is in association with the habit of flying by night. Although they are easily confused by strong light, and may then be persecuted by smaller birds, Owls are fierce and savage, and, in defence of their nests, will attack even man. The sexes are similar in colour, but the females are usually larger than the males, a character that occurs also in many Eagles and Vultures.

The Burrowing Owl (*Speotyto cunicularia*).

These curious little Owls live along with the Prairie-dogs (*Cynomys ludovicianus*) in the prairies of North America; generally standing at the entrance of the burrows. In the pampas of Argentina they have formed a similar partnership with the Viscachas (*Lagostomus trichodactylus*); in Florida there are no Prairie-dogs, and the birds make their excavations for themselves. The species shown is South American.

The Great Eagle-Owl (*Bubo maximus*). The Milky Eagle-Owl (*B. lacteus*). The Cape Eagle-Owl (*B. capensis*). The Spotted Eagle-Owl (*B. maculosus*). The Virginian Eagle-Owl (*B. virginianus*).

The Eagle-Owls are large and powerful birds, with conspicuous ear-tufts, and frequently with brightly-coloured eyes. They are fierce and active, and are found practically all over the world. The great Eagle-Owl is an occasional visitor to England.

The Little Owl (*Athene noctua*)

is common in Europe, Asia and Africa; but except for introduced specimens, is practically extinct in England. It is greyish-brown with white markings, and has the toes feathered or bristly. It haunts wooded country and orchards and very frequently is to be seen flying by day.

The Snowy Owl (*Nyctea scandiaca*).

This large, light-coloured Owl, with thickly-feathered feet, is a native of the northern circumpolar field. Its habits are diurnal, and it preys on small animals, such as lemmings, rats and mice, birds and fish.

The Mexican Eared-Owl (*Asio mexicana*)

is a small Owl with long brown tufts, and is very closely similar to the LONG-EARED OWL (*Asio otus*) found in this country.

The Barn-Owl (*Strix flammea*),

sometimes called the Screech, or nocturnal White Owl, is almost cosmopolitan, but has many local varieties, to which separate names have been given. It is orange-buff colour, with brown, grey, or white markings, and is white underneath with complete rings of feathers, known as facial disks, round the eyes. It nests in hollows of rocks or tree trunks, or in buildings, and is the most strictly nocturnal of the Owls.



Copyright.]

[Photo. by Henry Irving.

Fig. 40.—The Snowy Owl.

The Winking Owl (*Ninox connivens*).

This is an example of the group of HAWK-OWLS (*Ninox*), in which the feathering is not quite typical of that found in Owls generally ; like

other Owls, however, these possess bristles on the toes, a character absent in the case of all the Hawks.

Some of the more delicate Owls are placed in No. 14.

45. THE NORTHERN PHEASANTRY.

The Silver Pheasant (*Euplocamus* or *Gennæus nycthemerus*).

The Siamese Pheasant (*E. praelatus*). **Swinhoe's Pheasant** (*E. swinhoi*). **The Rufous-tailed Pheasant** (*E. erythro-phthalmus*).

The SILVER PHEASANT of South China, which is embroidered as a badge on mandarins' dresses, was long ago introduced into England, and is well known by its long white tail, with black markings on the lateral feathers, and its naked, red face. Swinhoe's Pheasant comes from Formosa and is even more handsome.

The Manchurian Pheasant (*Crossoptilon manchuricum*)

is a representative of West China and Tibetan "EARED" or "SNOW" PHEASANTS, characterised by their white ear tufts and loose, hairy plumage.

The Himalayan Monaul (*Lophophorus refulgens* or *L. impeyanus*)

is a representative of a genus containing four of the most brilliant known Pheasants. This bird, sometimes called the IMPEYAN PHEASANT, has a crest like that of a Peacock, uniform in colour with the purplish-green head; the neck has a rich, metallic sheen, with copper, purple and green reflections; the mantle is golden green, the lower back white, and the tail, chestnut.

The Horned Tragopan (*Ceriornis satyra*). **Cabot's Tragopan** (*C. caboti*).

The TRAGOPANS are fine Pheasants from India, Assam and China, distinguished by the occurrence in the males of erectile, fleshy, blue horns above the eyes, and gular wattles.

The Peacock Pheasant (*Polyplectron chinquis*)

comes from Indo-China, but there are allied species in the Malay Peninsula and Archipelago. These lovely birds are conspicuous because of the innumerable small eyes, shaded and coloured like those on a Peacock's tail, that decorate their feathers.

Sonnerat's Jungle-Fowl (*Gallus sonnerati*)

is a grey Jungle-Fowl from Southern India, distinguished by the waxy-yellow tips of the neck-hackles.

46. NORTH BANK YARDS AND AVIARIES.

Beyond the Northern Pheasantry, and on the sloping Canal Bank, are a series of small yards and wire-covered aviaries in which may be found a number of birds and mammals for which no room can be found alongside their nearest allies. Amongst the Mammals are the following :—

The Wombat (*Phascolomys mitchelli*).

The Wombats are short, clumsy and thick-legged Marsupials that are natives of Australia, and live entirely on vegetable matter, such as grass and roots, which they dig up with their strong claws. They are harmless creatures, and their flesh is said to be palatable.

The Haussa or Maned Sheep (*Ovis aries* var.).

This fine sheep from West Africa is usually parti-coloured, with strong, outwardly directed horns.

A number of Kangaroos and Wallabies (see p. 94) are also to be found here.

Amongst the Birds are

The Chaplain Crow (*Corvus capellanus*). **The Australian Crow** (*C. australis*). **The Rook** (*C. frugilegus*). **The Jackdaw** (*C. monedula*). **The White-backed Piping Crow** (*Gymnorhina leuconota*). **The Black-backed Piping Crow** (*G. tibicen*). **The Magpie** (*Pica rustica*). **The Chough** (*Pyrrhocorax graculus*).

The CROWS, JAYS, and PIES form a large group of Perching Birds almost universal in distribution, although no true Crows occur in South America. They are cunning, intelligent birds, given to combining for the purposes of obtaining food or for aggression. Many of them store up food for the future, and the collecting habit is often extended to any brightly-coloured objects.

The Kea (*Nestor notabilis*),

of the South Island of New Zealand, has acquired the pestilent habit of eating the flesh of living sheep. It has been supposed that it visited sheep originally to pick off and devour parasites in the wool, and has acquired its perverted taste by accident, but it was known to feed on offal at sheep stations before it had learned to attack living sheep. In captivity Keas are lively and intelligent birds, and whilst they will eat

flesh, do well on a vegetable diet. They must not be confused with the Ka-ka (*Nestor meridionalis*), a harmless bird.



Copyright.]

[Photo. by W. S. Berridge, F.Z.S.]

Fig. 41.—The Kea, or Mountain Ka-ka.

47. THE LEMUR HOUSE.

Beyond the North Bank Sheds lies a portion of the Gardens first laid out, in 1906, to receive the Collection of Indian Animals presented to the Society by the King when Prince of Wales, on his return from a State visit to India. Early in 1908, partly to prepare for the Australian Exhibition of that year, and partly to provide Reception Houses where newly arrived animals could be placed under observation and kept in a kind of quarantine, two Houses, each over a hundred feet long, were erected. The Houses are provided with artificial heat, and are designed to suit almost any kind of bird or mammal, except those of very large size. Owing to re-arrangements in the Gardens, however, the Houses on the North Bank will be occupied chiefly by Lemurs (see p. 21) and other animals temporarily dislodged from their proper quarters, such as

The Cat-Bear, or Panda (*Elurus julgens*),

a curious, Himalayan Carnivore, allied to the Racoons, about the size of a very large cat, with beautiful reddish brown fur, darker on the



[Copyright]

[Photo, by W. S. Berridge, F.Z.S.]

Fig. 42.—The Cat-Bear, or Panda.

underparts and ringed on the tail. The Cat-Bear has a very broad and rounded head, and sharp claws. It climbs well, and in captivity lives on bread and milk, eggs and small birds.

The Tamandua Ant-eater (*Tamandua tetradactyla*)

is a small arboreal Ant-eater from Central and South America. In captivity it lives on chopped meat, bread and milk and hard-boiled eggs.

The Thylacine (*Thylacinus cynocephalus*).

The Thylacine, or Tasmanian Wolf, in its general build and habits



Copyright.

[Photo by W. S. Berridge, F.Z.S.]

Fig. 43.—The Tamandua Ant-eater.

resembles a Wolf or Wild Dog, and is very fierce. It is found only in Tasmania, and, as it does great damage to flocks, is being killed off by the settlers. It is a lithe and active creature, with a long face, a skull curiously pinched between the eyes, and dark stripes across the greater part of the back. It has a curious wheezing cry, and its stupidity and the shape of its hind quarters show its affinity with Kangaroos.

Opposite the end of the Lemur House is a temporary shed with Tasmanian Devils (see p. 78) and many small Marsupials.

After leaving the Lemur House, the visitor may pass to the Middle Garden, either by a new bridge erected in 1906, or may retrace his steps and re-cross the Canal by the old bridge near the Tunnel. The latter route is followed in this Guide.



Copyright.]

{Photo. by W. S. Berridge, F.Z.S.

Fig. 44.—The Tasmanian Wolf.

THE MIDDLE GARDEN.

Having re-crossed the old canal bridge, the visitor should turn to the left, at

48. THE MAMMALS' OUT-DOOR CAGES.

This structure, which lies between the Canal Bridge and the Kangaroos' Shed, contains rock-work and branches of trees, and is constructed so as to be suitable for any hardy Mammal.

The Coati (*Nasua nasua*).

The Coati is an ally of the Racoons, and is a native of the southern parts of the New World. It has a very long flexible nose, and a ringed tail, and becomes very tame and gentle in captivity.

The EDENTATA, which include the ANT-EATERS, ARMADILLOS and SLOTHS, are a very peculiar group of Mammals, which in the geological past were more numerous and much more important members of the Animal Kingdom than are their survivors of to-day. In many respects

they represent a lateral and decaying branch of the tree of Mammalian life, and they are now confined almost entirely to the Tropics of South America and Africa. The Old Sloth and Ant-eaters' House, which they used to occupy in the Gardens, had to be pulled down in 1909, and until new quarters are provided they will be distributed in various buildings (Nos. 26, 42A and 47). In the Small Cages, several will be found, probably including

The Armadillos (*Dasypodidæ*).

These are all New-World creatures, chiefly South American, and are at once to be recognised because the greater part of the skin is transformed to bony plates, jointed so that the animals can roll themselves, so protecting the limbs and all the soft parts of the body. They are harmless and inoffensive creatures, omnivorous in their diet, and regarded as good to eat by the inhabitants of the country. Until very recently gigantic armadillo-like creatures (*Glyptodontidæ*) existed in



Copyright.]

[Photo. by H. S. Bertrams, F.Z.S.]

Fig. 45.—The Hairy Armadillo.

the southern parts of South America. These, like most creatures that in the history of life on the world have resorted to protection, are extinct, having been beaten in the struggle for existence by more active and intelligent forms.

49. THE KANGAROOS' SHED AND PADDOCK.

Kangaroos are the best known of the MARSUPIALS, or POUCHED ANIMALS, which are found only in Australia and New Guinea and in America, and possess an organisation in most respects lower than that of other Mammals. The characteristic feature that distinguishes Mammals from Reptiles is the mode of reproduction. In Reptiles, with a few unimportant exceptions, large eggs are laid, and the young develop within these, being nourished by the supply of yolk. In most Mammals, the eggs are microscopic in size, and the young are developed inside the body of the mother, the necessary nutrition being supplied from the blood of the mother by means of a structure known as the placenta. In nearly all the Marsupials, the placenta is of a simpler type than that found in higher Mammals, and the young are born in an extremely immature condition. They are then suspended to the teats of the mother, which are generally placed inside the marsupium, or pouch in the front of the abdomen, and there they remain attached until their development has reached the stage at which higher Mammals are born. In many forms, such as the Kangaroos, the young remain in the pouch for a still longer period, and may be seen, long after they have reached a fair size, and are perfectly formed and active, with their heads peeping out from the pouch of the mother.

The Great Kangaroo (*Macropus giganteus*). **The Black-faced Kangaroo** (*M. melanops*). **The Great Wallaroo** (*M. robustus*). **The Black Wallaby** (*M. ualabatus*). **The Agile Wallaby** (*M. agilis*).

There are very many species of Kangaroos, all native of Australia and Tasmania, and all with the same general habits. Some of them have been successfully acclimatised in this country, and most of those that have been in the Gardens have bred regularly. Kangaroos are unlike any other living creatures. The heads are small and rather rabbit-like, with large ears and soft, startled eyes. From the neck the body expands in a pear-shaped fashion to the very strong hind quarters, which end in a massive and powerful tail. The characteristic position is erect, the weight of the body being supported on the powerful hind limbs and tail as on a tripod, while the fore-limbs, which have powerful claws, hang suspended by the sides. The mode of progression is by enormous leaps, which, although very long, are not high, so that a comparatively low fence is sufficient to retain the animals. They are purely herbivorous, living, like deer, on herbage of all kinds.

The Tree-Kangaroos (see p. 74), the smaller herbivorous and

frugivorous Marsupials, such as the Wombat (see p. 88) and the Phalangers (see p. 82), and the Carnivorous forms (see pp. 82 & 88) have at present to be housed in other buildings.

Opposite the Kangaroo Shed is a large new building in white stone and purple brick. This is

50. THE OFFICES AND LIBRARY.

For many years the Headquarters of the Society were at 3, Hanover Square, but in 1909, when it became plain that rebuilding would have to be carried out, it was decided to remove to a site at the Gardens. The new buildings were designed by Messrs. Belcher, R.A., and Joass, and were completed in August, 1910. The main part of the Building consists of a large Library to contain the Society's valuable collection of Zoological Literature, amounting to over 30,000 volumes, invaluable to working zoologists. The Library is arranged so that it serves as a Lecture Hall for the Society's Scientific Meetings and Popular Lectures, and has attached to it two fine Reading Rooms. The Secretary's Office, the Scientific Publication Department, the Council Room and the General Administrative Offices are on the ground and first floors, and the extensive basement contains Store-rooms and Service-rooms. The Offices communicate with the Gardens by a door opposite the Kangaroo Sheds. Visitors may make any enquiries there, but the Library and main part of the Building are open only to Fellows.

On leaving the Kangaroo Sheds the visitor should turn to the right, along a path facing the side of the New Building, and leading over the Tunnel Walk. To the right lies

51. THE BRUSH-TURKEYS' ENCLOSURE.

The Brush-Turkey (*Talegalla lathamii*).

The Brush-turkeys or Mound-builders (*Megapodidæ*) are a small family of birds of insignificant appearance, rather like small Turkeys or large Partridges, but with very large feet and claws and a specially large hind toe. Most of them occur in the Australian region, but one form is found in the Nicobar Islands. When breeding they scratch up a mound of earth and vegetable refuse, in which the eggs are buried and left to hatch by themselves, after the manner of Reptiles. Sometimes the eggs are simply buried in the ground, but in all cases the young are hatched fully fledged, and able not only to run but even to fly almost immediately, and to live an independent life. The birds in the Gardens construct their mound and lay eggs every season. The eggs are exceedingly large for the size of the birds, and are said to be good eating.

After passing the Brush-Turkeys, the visitor should turn to the right, where he will reach an enclosed yard which is

52. THE THARS' HOUSE.

Sheep and Goats.

The Society possesses a good collection of Sheep and Goats, but, unfortunately, is not yet able to exhibit them together, and visitors specially interested in these animals must consult the Index of this Guide. The greater number of them, however, are to be found in the Middle Garden, in the part not yet reached by the visitor who is following this Guide. Sheep and Goats are hollow-horned ruminating mammals probably intermediate in position between Oxen and Antelopes. They are typically mountain animals and confined to the Northern Hemisphere. It is almost impossible to draw an exact line between Sheep and Goats. Sheep are specially accustomed to cropping short herbage; Goats browse on leaves and twigs. Sheep have small glands between the hoofs of the forefeet, and the rams are devoid of the strong smell characteristic of he-goats. The horns of both are usually triangular in section, and strongly wrinkled; in Sheep the horns of the ram tend to be twisted in a large "ram's horn" curve; in Goats the horns are straighter, sweeping upwards and backwards, but many exceptions occur. Goats usually have a beard.

Ibexes are large, wild Goats with upright curved horns. Markhor are rather sheep-like Goats with strongly twisted horns. Thar and Rocky Mountain Goats have short, thick horns.

The Thar (*Hemitragus jemlaicus*)

is a Himalayan Wild Goat that inhabits forests from Kashmir to Bhutan. It differs from typical Goats in its short, thick, and much compressed horns, the anterior borders of which are keeled, and its moist, naked muzzle. The Thar thrives in captivity, and breeds freely in the Gardens.

53. REFRESHMENT BAR.

The principal refreshment premises are in the South Garden (No. 39), but here light refreshments may be obtained. Opposite to this is a low building with Aviaries in front; this is

54. THE PARROT-HOUSE.

PARROTS (sub-order *Psittaci*) are perhaps the most interesting to the public of existing birds because of their docility, gorgeous coloration, and amusing habits. The Society maintains what is perhaps the finest collection of living Parrots in the world. Some of the hardier forms will be found in the Canal Bank Aviary (No. 56A), and some of the smaller species in the Crescent Aviary (No. 25).

There are about eighty genera and some five hundred species of Parrots found in the Tropical and Sub-Tropical regions of the Old

and New Worlds, one only reaching North America. The most distinctive characters of Parrots are the beak and the feet. The beak is large and powerful, and the upper jaw is movable and hinged to the skull, while the lower jaw and beak are always much shorter and overhung by the upper beak. The feet are permanently "zygodactylous," that is to say, two toes are always turned backwards, and two forwards. The colouring is usually very gorgeous, and the voice is loud and screaming. All the Parrots are very intelligent; the best talkers are usually red-tailed Grey Parrots of Africa (*Psittacus erithacus*), but individuals belonging to many other species are equally clever.

Parrots are gregarious and usually to be found in large flocks. They are dainty in their diet, and live chiefly on fruits, flowers, buds, leaves, seeds, and in some cases insects. They have the habit, rare in birds, of holding the food in one foot while eating it.

The Red-and-Yellow Macaw (*Ara chloroptera*). **The Red-and-Blue Macaw** (*A. macao*). **The Blue-and-Yellow Macaw** (*A. ararauna*). **The Military Macaw** (*A. militaris*), **The Blue or Hyacinthine Macaw** (*A. hyacinthina*). **The Severe Macaw** (*A. severa*). **The Noble Macaw** (*A. nobilis*). **Spix's Macaw** (*Cyanopsittacus spixi*).

The Macaws are South American birds, generally very large in size and with extremely brilliant plumage. The tail is always long, and in it the middle pair of feathers exceed the others in length. The RED-AND-YELLOW MACAW is the most showy; it has head and beak of flaming scarlet, large bare cheeks of a whitish colour, the wings and under parts yellow, and some of the tail feathers different shades of bluish-green. The RED-AND-BLUE MACAW has the wings and outer tail feathers of a light cobalt blue, and the head, neck, and breast of a deep crimson hue. The BLUE-AND-YELLOW MACAW is the most common, and has the back a light ultramarine blue, in strong contrast with the deep yellow plumage of the breast and under parts. A band of velvety blackness under the skin marks off the head from the throat and neck. The white bare spaces of the cheeks are marked with black lines. The MILITARY MACAW has the forehead a deep crimson, and this colour gradually merges with the sedge-green of the nape, neck, and back, while towards the tail the colour changes again to blue. The HYACINTHINE MACAW is extremely handsome; the back is of a dark ultramarine blue tint, the pinions are steel-blue, and the unusually small bare spaces near the gape are of a deep orange-red, the same colour decorating the eyelids. The SEVERE MACAW and the NOBLE MACAW are smaller and more sombre forms. SPIX'S MACAW is a very rare species, its general colour is a slaty-blue, the sides of the head being grey, and the beak glossy black; there are no bare patches on the cheeks.

The Great Rose-crested Cockatoo (*Cacatua moluccensis*). **The Triton Cockatoo** (*C. triton*). **The Sulphur-crested Cockatoo** (*C. galerita*). **Leadbeater's Cockatoo** (*C. leadbeateri*). **Ducorps' Cockatoo** (*C. ducorpsi*). **The Red-vented Cockatoo** (*C. haematuropygia*). **The Slender-billed Cockatoo** (*Licmetis tenuirostris*). **The Ganga Cockatoo** (*Callocephalon galeatum*). **The Banksian Cockatoo** (*Calyptorhynchus banksi*).

The Cockatoos, which are all natives of the Australian region, including the Philippine and Sulu Islands, are easily recognised by their soft, dense plumage, mostly white, or if coloured, of delicate tints, and by the erectile crests nearly always present on the head. The GREAT ROSE-BREADED COCKATOO, from the Moluccas, is perhaps the finest of



Copyright]

[Photo. by W. S. Berridge, F.Z.S.

Fig. 46.—The Banksian Cockatoo.

them. **LEADBEATER'S COCKATOO** is a beautiful Australian form in which the white is diversified by a peach-blossomlike tint on the head, neck and breast. The **SLENDER-BILLED COCKATOO** derives its name from the upper beak, which is much longer and less wide than is usual

in the group. The BANKSIAN COCCATOO is a rare Australian bird, very dark in colour, so as to be almost black, with a greenish gloss.

Guilding's Amazon (*Chrysotis guildingi*). The Plain-coloured Amazon (*C. inornata*). The Golden-naped Amazon (*C. auripalliata*). Levaillant's Amazon (*C. levaillanti*). The Vinaceous Amazon (*C. vinacea*). The Yellow-fronted Amazon (*C. ochrocephala*). The Blue-fronted Amazon (*C. æstiva*). The White-fronted Amazon (*C. albifrons*).

The Amazons are gaudy, noisy birds that range from Central America to Argentina, and include a number of species with very limited distribution. The BLUE-FRONTED AMAZON is the best-known form and is found from Brazil southwards. The plumage varies considerably in different individuals, but the prevailing tint is green over the body and blue on the forehead. GUILDING'S AMAZON, of which several examples are shewn, is one of the rarest of living birds. It is a native only of the island of St. Vincent, and its haunts were almost wholly destroyed by the eruption of Mount Soufrière.

The African Grey Parrot (*Psittacus erithacus*). The Greater Vasa Parrot (*Coracopsis vasa*). The Lesser Vasa Parrot (*C. nigra*). Meyer's Parrot (*Psecephalus meyeri*). The Black-headed Caique (*Caica melanocephala*).

The so-called true Parrots are distinguished by their square and short tails. Several varieties of the AFRICAN GREY PARROT are exhibited, among them being a typical form with scarlet tail feathers and others with the corresponding feathers nearly white. The GREATER VASA PARROT is a Madagascar bird, a close ally of the Grey Parrot, but much larger in size and very rare. The LESSER VASA, also from Madagascar, is almost black. The BLACK-HEADED CAIQUE, from Demerara, has a coloration very unusual in Parrots. The head is black with dark-grey naked patches, the back is green, and the citron-yellow throat is separated by a terracotta-coloured neck-band from the creamy breast and flanks.

Parrakeets.—The Blossom-headed (*Palæornis cyanocephala*). The Burmese Slaty-headed (*P. finschi*). The Fasciated Andaman (*P. fasciatus*). The Derbian (*P. derbiana*). Tytler's (*P. tytleri*). The Large Andaman (*P. magnirostris*). Barraband's (*Polytelis barrabandi*). The Red-winged (*Ptistes erythropterus*). The King Parrot or King Lory (*Aprosictus cyanopygius*). Brown's (*Platycercus browni*). Masters' (*P. mastersianus*). Pennant's (*P. elegans*). The Rosella (*P. eximius*). Stanley's (*P. icterotis*). The Pale-headed (*P.*

pallidiceps). **Bauer's** (*P. zonarius*). **The Undulated or Warbling** (*Melopsittacus undulatus*). **The Antipodes Island** (*Cyanorhamphus unicolor*). **The New Zealand** (*C. novæ-zealandiæ*). **The Yellow-headed** (*C. auriceps*).

Parrakeets are distinguished externally by their long and slender tails. Nearly all of those belonging to the genera *Palæornis* and *Polytelis* have red bills, but are distinguished anatomically from the Parrakeets of the genus *Platycercus* by the presence in the skeleton of a collar bone or merrythought. The members of the genus *Palæornis* are Old-World forms, ranging from South China to Australia. The **BLOSSOM-HEADED PARRAKEET** is a beautiful form from India and Ceylon. In the male the colour of the head is lilac shading into purple and separated by a black neck-band from the green shades of the body generally. The **LARGE ANDAMAN PARRAKEET** is distinguished by the relatively huge size of its bill. The **KING PARROT** of Australia, erroneously called the **KING LORY**, is a showy bird with the head, neck, breast and underparts bright scarlet in the male, dark green in the female.

Conures.—**The Cactus** (*Conurus cactorum*). **St. Thomas'** (*C. pertinax*). **Petz's** (*C. canicularis*). **The Black-headed** (*C. nanday*). **The Red-billed** (*Pyrrhura vittata*). **The Patagonian** (*Cyanolyseus patagonicus*). **The Red-masked** (*Conurus rubrolarvatus*).

The Conures, which are chiefly natives of Central and South America, are relatives of the Macaws, but have the tails much shorter. The general coloration of the plumage is green.

Westerman's Eclectus (*Eclectus westermanni*). **The Grand Eclectus** (*E. roratus*). **The Cardinal Eclectus** (*E. cardinalis*).

The members of the genus *Eclectus* are Old-World birds, ranging from the Moluccas to the Solomons. The colours are generally very rich reds and greens. The sexes are usually extremely different, the males in most cases being green and the females red.

The Blue Mountain or New Holland Lorikeet (*Trichoglossus novæ-hollandiæ*). **The Red-banded Lorikeet** (*T. rubritorquatus*). **The Ornamented Lorikeet** (*T. ornatus*). **Forsten's Lorikeet** (*T. forsteri*).

The Lories and Lorikeets are medium-sized Parrots, characterised by a tongue furnished with a tuft of bristles at the tip, used as a brush by which pollen, honey, and juices can be licked up. The colour is usually brilliant, red being the most common tint. They are confined to the Australian region, and do not range into New Zealand.

Immediately beyond the Parrot House is a large red-brick building,

55. THE ELEPHANT-HOUSE.

The Elephants are the only living representatives of a group of Ungulate Mammals with characters that separate them widely from all other living animals. The nose and upper lip are pulled out into a very long and flexible proboscis (the trunk), at the end of which lie the nostrils. In the living forms there are a pair of incisors, or front teeth, in the upper jaw, and none in the lower jaw ; these grow throughout the life of the animals, and form the long tusks, well known in commerce as the chief source of ivory. The cheek teeth are very large, and have flat surfaces with transverse ridges used for grinding the vegetable food ; not more than one or portions of two teeth are ever in use at once on either side of each jaw. The limbs are very strong, and the feet are broad and massive. The skin in the adult is nearly devoid of hair, but in the new-born young hair is abundant, as in the extinct hairy mammoth.

The Indian Elephant (*Elephas maximus*).

In this form the forehead is higher and runs up to an angle with the line of the back, instead of passing into it in a curve. The ears are relatively small, and the end of the trunk is formed by a finger-like upper lip and a much shorter lower lip.

The African Elephant (*Elephas africanus*)

A full-grown African Elephant attains a larger size than the Indian Elephant, and is the largest of living land animals. The forehead is more rounded and lower, the ears are larger than in the Indian form, and the tip of the trunk has upper and lower lips nearly equal in size.

The Indian Rhinoceros (*Rhinoceros unicornis*). **The Javan Rhinoceros** (*R. sondaicus*). **The African Rhinoceros** (*R. bicornis*).

The Rhinoceroses belong to the Odd-toed set of Ungulates, and have three digits, each ending in a strong hoof, on the fore and hind limbs. The middle digit, corresponding to our middle-finger or third toe and to the single digit of the horse, is much longer and stronger than the others. The most striking characters of the Asiatic Rhinoceroses are the large erect ears, the gnarled skin, thickened so as to form massive plates, united by thinner portions forming flexible joints, and the horn or horns, composed of stout hairs matted together, carried on the middle line of the face. The Indian Rhinoceros and the Javan Rhinoceros have each one horn ; the small Sumatran Rhinoceros, and, in Africa, the common Rhinoceros (*R. bicornis*) have two horns, one situated behind the other. The so-called Hairy-eared Rhinoceros, from Chittagong, is probably the same species as the Sumatran form, and, like it, has two horns. The African Rhinoceros is a smaller and less bulky animal, and its skin is not thrown into permanent folds. The Rhinoceroses are vegetable feeders.



Copyright.]

[Photo. by W. S. Berridge, F.Z.S.

Fig. 47.—The African Rhinoceros.

56. THE CHAMOIS' YARD.

The Chamois (*Rupicapra tragus*)

inhabits the mountains of Europe from the Pyrenees to the Caucasus, and is to some extent intermediate between Antelopes and Goats. The pair exhibited came from the collection of the Emperor of Austria at Schönbrunn, near Vienna. These bred in the Gardens in 1909, and successfully reared a young male.

On the Canal Bank, opposite the Chamois, is a large wire enclosure occupied by Parrots ; this is

56a. THE CANAL-BANK AVIARY.

This Aviary was erected in 1903 for the hardier Parrots. Cockatoos, Macaws and Parrakeets have been kept in it with success, and some of them have bred. Birds are able to maintain a higher temperature than that of mammals, notwithstanding the temperature of the surrounding

air, and the vast majority of them, including Parrots, can endure the climate of an English winter without artificial heat, if given shelter from draught, and provided with abundant food.

57. THE DEER-SHEDS.

In these are to be found a series of smaller Deer, the larger forms being kept in the Deer and Cattle House (No. 32). Amongst these may be noticed examples of the rare PANOLIA DEER (*Cervus eldi*) from Siam and Burma, and of the INDIAN AXIS, or SPOTTED DEER (*C. axis*).



Copyright]

Fig. 48.—The Axis Deer.

Photo. by W. S. Berridge, F.Z.S.

The Grecian Ibex (*C. aegagrus*). **The Himalayan Ibex** (*C. siberica*). **The Caucasian Ibex** (*C. cylindricornis*).

The Society has some fine specimens of the Ibex from various localities. They can be recognised as goats by their strong odour.

The Markhor (*Capra megaceros*).

This fine Indian animal has been regarded as a sheep, but is certainly more nearly allied to the goats. It possesses a beard, which is long and copious in the male, but confined to the chin in the female. The horns of the male are very much larger than those of the female, and in both sexes the horns are spirally twisted.

The Barbary Wild Sheep (*Ammotragus lervia*).

This fine sheep is found on the precipitous ranges of the southern slopes of the Atlas Mountains, and also in Tripoli and Egypt. Its pale rufous colour makes it almost invisible in its native haunts. The males possess a long neck-mane.



Copyright.]

Fig. 49.—The Beaver

[Photo. by W. S. Berridge, F.Z.S.

58. THE BEAVER POND.

The European and Canadian Beavers (*Castor fiber* and *C. canadensis*).

Probably very few visitors to the Gardens have ever seen the Beavers

belonging to the Society. However, any evening, just as dusk falls, the food of the Beavers, consisting of bread, carrots, and green vegetables, is placed in their enclosure, and almost immediately the animals come out from their house to fetch it. Beavers are large Rodent Mammals, with naked, trowel-shaped tails with which they steer themselves in swimming, or use to beat the water as an alarm signal. They are aquatic in habit, and their power of gnawing through tree trunks is well known.

58a. THE HYRAX CAGES.

The Klip-dass or Cape Hyrax (*Procavia capensis*).

The Hyrax is in appearance and habits like a large Guinea-pig, but its structure is so peculiar that zoologists have placed it in a separate order of the Mammalia. The structure of the teeth, alimentary canal, and brain shows that it has some relationship with the Ungulates. It probably represents a survival of a very primitive type. The fossil remains of a Hyrax-like creature, as big as a sheep, have recently been discovered in Egypt by Dr. Andrews. Although their structure seems little adapted for arboreal life, these clumsy-looking animals climb trees expertly, and it has been found advisable to keep them in covered enclosures.

59. THE SUPERINTENDENT'S HOUSE.

59a. THE DEER-YARD.

To the right of the Superintendent's House a steep path leads down the Canal Bank to a large Paddock, occupied by deer or other ruminants.

60. THE HIPPOPOTAMUS-HOUSE.

The Hippopotamus (*Hippopotamus amphibius*).

There are two species of HIPPOPOTAMUS, a smaller from West Africa, and a larger, the common Hippopotamus, from the rest of Africa, and particularly from the Upper Tributaries of the Nile. Hippos are, next to Elephants, the largest living terrestrial animals, and are even-toed Ungulates, not far removed from the Pigs. They are bulky animals, with very long, round, and barrel-shaped bodies, short and thick legs, and enormous heads with gigantic mouths. The eyes are small but projecting, the minute ears are rounded in shape, and the slit-like nostrils are placed close together on the highest point of the muzzle, so that when the animal is in the water the nostrils may be raised above the level for breathing, without more than a few inches of the head appearing above the surface. The nostrils and ears can be closed, and the

animals spend a large part of their time in the water, being able to swim well. Hippos are vegetable feeders, and in their native country come on land at night to graze on herbage. A living male Hippo reached the Gardens in 1850, and a female four years later. A female was bred from these, born in 1872, and lived in the Gardens until March, 1908, when it died from old age.

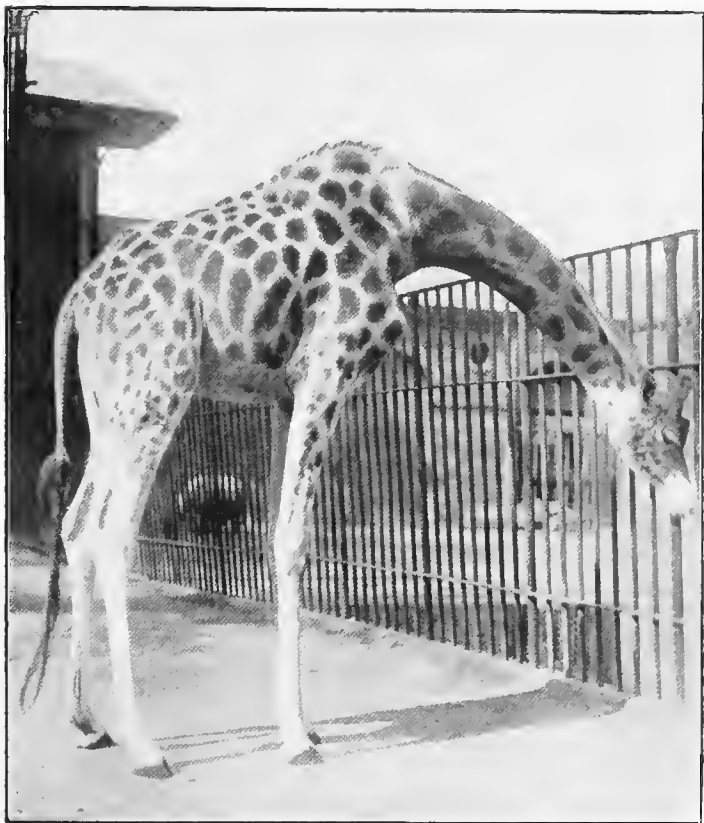
61. THE TAPIRS' HOUSE.

The Brazilian Tapir (*Tapirus americanus*).

The Tapirs form a separate family of odd-toed Ungulates, remotely allied to the Horses. They are gentle and inoffensive inhabitants of tropical forests in Central and South America, and throughout the Malay Peninsula, to Tenasserim. Their diet is vegetarian, and they possess a flexible proboscis. The Malay Tapir, when adult, is black and white with white-tipped ears, and its parti-coloured body makes it a singular object. The adult American Tapirs retain the white-tipped ears, but are otherwise almost uniformly dark in colour, the different races varying considerably in shade. Tapirs are easy to keep in captivity, and frequently breed. In 1909, the pair of American Tapirs reared a young one. The young of American and Malay Tapirs are closely similar. The general ground colour is dark, but the ears are white-tipped and the legs are spotted. The sides of the body are richly decorated with irregularly placed longitudinal white stripes, but these disappear before the animals become adult.

62. THE GIRAFFE-HOUSE.

The first living Giraffe which is known to have reached England was sent to His Majesty King George IV in the year 1827. It lived two years and two months. In the summer of 1836, four Giraffes from Kordofan reached the Gardens safely. These succeeded in the most remarkable manner, and no less than seventeen individuals were bred in the Society's Gardens from these animals or their descendants. In 1881 the last survivor of this stock died; but the Society was able to purchase other examples and to exhibit them until the last died in 1892. At that time, and for some years afterwards, the Soudan was practically closed because of the rise of Mahdism, and the next arrival was a fine young female imported from South-East Africa, which, however, died in 1907. A pair of young Giraffes from the Egyptian Soudan was presented to the Society by Col. Mahon, the Governor of Kordofan, in 1902, and from these was born in Sept. 1907 a young female, which has been successfully reared. The colouring of Giraffes from different localities varies very much, and some naturalists believe that a number of species, and perhaps two genera, should be recognised.



Copyright.]

Fig. 50.—The Giraffe.

[Photo. by W. S. Berridge, F.Z.S.]

63. THE WILD ASSES' HOUSE.

The Family *Equidæ* of zoologists contains the HORSES, ASSES and ZEBRAS. These are descended from creatures long ago extinct, in which all four legs possessed extremities with five fingers or toes, the whole hand or foot being placed flat on the ground in walking. Geological history shows that the ancestors of the horse gradually came

to walk on the ends of the fingers and toes, and that in the course of ages the middle finger or toe became greatly enlarged, its nail forming the hoof, while the other digits disappeared.

The Domesticated Horse (*Equus caballus*)

is distinguished from the ASSES, QUAGGAS and ZEBRAS by having relatively smaller ears, by a more abundant growth of long hair on the tail, and usually by the presence of "chestnuts," or bare warty patches, on the inner side of each hind-leg as well as fore-leg. These callosities are probably the remains of recognition or scent glands, such as are found on the limbs of some other quadrupeds. It is probable that no truly wild representatives of the Domestic Horse now exist, the Wild Horses that occur, or till recently occurred, in several parts of the world being probably descended from domesticated forms.

Prjevalski's Wild Horse (*Equus prjevalskii*).

The Society possesses an example of this interesting creature, which lives in the deserts of Mongolia, and in several respects is intermediate between the Domestic Horse and the Wild Asses of Asia. The ears are shorter and the tails have more hair than in the case of the Asses, and, like Horses and unlike Asses, there are callosities on the hind-limbs as well as on the fore-limbs.

The Domestic Ass (*Equus asinus*). The Egyptian Wild Ass (*E. tæniopus*). The Somali Wild Ass (*E. somalicus*).

There is much difference of opinion as to how far the Wild Asses of Egypt and Africa are to be regarded as merely races or distinct species, but it is generally agreed that these forms are the source of the Domestic Ass. In the Egyptian form there is a dark stripe along the back and another across the shoulder, and the legs are banded. In the Somali race, the finest Wild Ass, the dorsal stripe is indistinct and the shoulder stripe is absent, but the legs are boldly marked. The Society has reared a number of successful hybrids between English and Spanish Domestic Asses and the Somali Wild Ass stallion.

The Onager (*Equus onager*). The Syrian Wild Ass (*E. hemippus*). The Kiang (*E. kiang*). The Indian Wild Ass (*E. hemionus indicus*). The Dziggetai (*E. hemionus*).

The Asiatic Wild Asses are quite distinct from the African forms. They are not so grey in colour, but have a rufous tint; their ears are smaller; they have the dorsal stripe but not the shoulder stripe. As in the case of the African forms, opinions differ as to how far it is correct to give specific names to these species. The Kiang, in its most typical form, is the most distinct, being larger in size, redder in colour and with a more woolly coat. It is a native of the barren plains of Tibet, being found in herds at elevations of 14,000 feet and upwards.

64. THE ZEBRA-HOUSE.

Zebras are allied more closely to the Donkeys than to the Horses. In both Asses and Zebras the mane is erect, the upper part of the tail is free from long hairs, and there are "chestnuts" only on the front limbs; the ears are longer, the head is relatively larger, and the hoofs are narrower than in the horse. Zebras, however, are definitely distinguished from the Asses by the possession of more or less completely striped heads and bodies.

The Mountain Zebra (*Equus zebra*)

is one of the smallest of the group, and inhabits hilly districts; in former times it was very abundant in Cape Colony, and was known as the COMMON ZEBRA, now a most erroneous designation. With the exception of the under parts of the body and the inner sides of the thigh, the whole of the head, body, and limbs, as well as the upper part of the tail, are striped. It can be distinguished from the other Zebras at once by the gridiron pattern on the back above the tail.

Burchell's Zebra (*E. burchelli*). **Grant's Zebra** (*E. granti*).
Chapman's Zebra (*E. chapmani*).

These Zebras are more horse-like in form than the Mountain Zebra, with shorter ears and broader hoofs. Grant's Zebra is the most fully striped of the three, and ranges from Abyssinia to German East Africa. In Chapman's Zebra, which occurs in Damaraland, the stripes tend to disappear on the legs, and the hind-quarters show "shadow stripes." These latter two are local races of the true Burchell's Zebra, which formerly inhabited Bechuanaland, but is now verging on extinction. In it the stripes tend to disappear on the quarters. The QUAGGA, which had no stripes on the haunches, and which is now quite extinct, is regarded by some naturalists as practically only the most southerly and least striped of this group of Zebras.

Grévy's Zebra (*E. grevyi*).

This is the largest and most handsome of the Zebras, and may be distinguished by its greater size, peculiar narrow and vivid stripes, and large ears. It is a native of the southern parts of Abyssinia and the adjoining districts of Somaliland. In the other Zebras, and particularly in Burchell's and Grant's, the transverse stripes on the hind limbs are continued up over the haunches. In GREVY'S ZEBRA these end about the level of the middle horizontal line of the body, and meet there the vertical stripes of the body and rump.

Zebras are fertile both with horses and asses, and many interesting hybrids have been obtained. An interesting feature about these is that although the stripes are faint they are very numerous, and from this it has been inferred that the ancestor common to horses, asses, and zebras

was a very highly striped form, and also that, so far as striping goes, Grévy's Zebra is more primitive than the other Zebras. A fine hybrid between a Pony and a Chapman's Zebra Mare, the gift of the late King Edward to the Society, shows the elaborate striping very well.

The visitor on leaving the New Zebra House should pass along the front of the Giraffe-Yard and the Hippopotamus-Pond. He will then come to a series of small sheds, which are

65. THE GAZELLE-SHEDS.

In these are placed a number of the smaller Antelopes known as Gazelles, and some Marsh-Bucks, for a description of which see p. 33.

66. THE EXIT.

The visitor who has followed this itinerary has seen practically all the objects of interest in the Gardens. The Exit by the Turnstile from the Middle Garden leads out of the Gardens into the Outer Circle immediately opposite the Main Entrance. Cabs may nearly always be obtained here. Visitors who intend to walk to a station or 'bus should consult p. 4, as well as the Street-Plan on the reverse of the Plan of the Gardens in the front of this Guide.

CARE OF THE ANIMALS.

Visitors are urgently requested to co-operate with the Staff in preventing any teasing or irritating of the animals. The Head Keepers, who can be recognised by the gold-lace bands on their caps, should be communicated with at once if visitors wish to call attention to interference with any of the animals.

All visitors are warned that the Keepers have instructions and authority to remove at once from the Gardens any persons found annoying, teasing or injuring the animals in any way.

FEEDING-TIMES OF THE ANIMALS.

PELICANS	2.30 P.M.
OTTERS	3.0 P.M.
POLAR BEARS	3.0 P.M.
EAGLES (except Wednesdays)	3.30 P.M.
LIONS AND TIGERS	4.0 P.M.
SEA-LIONS	4.30 P.M.
DIVING BIRDS in the Diving Birds' House	12 P.M. and 5.0 P.M.

N.B.—In November, December, January, and February, the Lions and Tigers are fed at 3 P.M., and the Sea-lions at 3.30 P.M.

SALE OF DUPLICATES.

Lists of Duplicate Animals for Sale are kept at the Gardens' Office.

BATH CHAIRS.

These may now be obtained without giving notice, as a number, with the requisite attendants, are to be found at the Main Gate.

PUBLIC TELEPHONE.

By arrangement with the General Post Office, a Public Telephone Call Station, on the slot system, has been placed in the Gardens for the use of Visitors. It will be found in the porch of the Antelopes' House (No. 13).

LOST PROPERTY.

It is requested that any articles found in the Gardens be at once taken to the Office (No. 50), where notice should be given of any losses.

NEW ARRIVALS.

A printed list of the most recent additions to the Collection will be found at the Gates.

LABELS.

The endeavour is made to have a label for each animal, giving the popular and scientific names, and the country of origin. When the latter is placed within brackets it signifies the natural home of the species in question; when no brackets are marked, it signifies that the actual specimen is known to have been obtained in the locality indicated. The word "deposited" means that the animal is not the property of the Society.

INDEX.

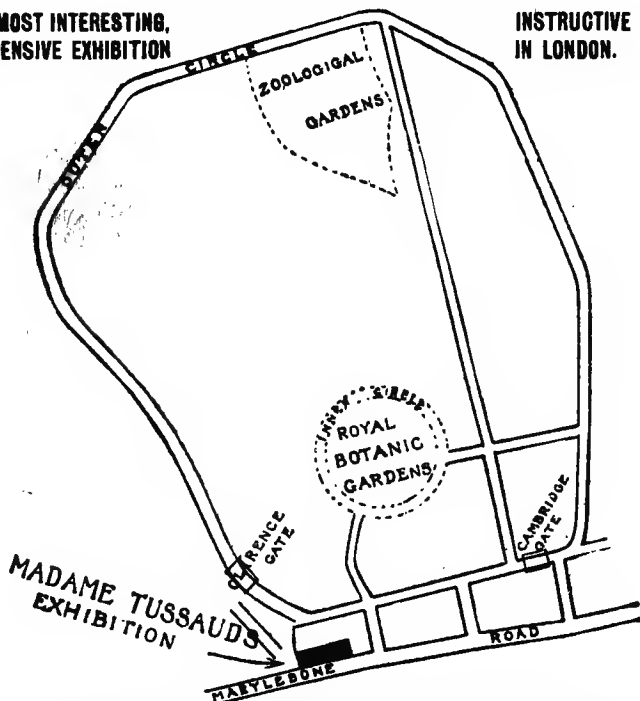
	PAGE		PAGE		PAGE		PAGE
Adders ..	70	Dasyure ..	83	Klipspringer ..	34	Rifle Bird ..	37
Adjutant ..	26	Deer ..	58-60, 103	Kobs ..	34	Robins ..	7
African Collection, H.M. The King's	73	Dingo ..	30	Laboratories..	57	Rodents ..	15, 74, 82
Agouti ..	15	Diving-birds..	75	Lammergeier ..	56	Ruff ..	73
Alligator ..	66	Doves ..	6	Lavatories. See Plan of Gardens.		Salamanders ..	65
Amazons ..	99	Dromedary ..	41	Lemurs ..	21, 89	Screamer ..	43
Ant-Eaters ..	90	Drongos ..	6	Leopard ..	33	Sea-Eagles ..	56
Antelopes ..	33-36	Ducks ..	10, 72, 73	Library ..	95	Sea-Lions ..	27
Apes ..	17-24	Duiker ..	34	Lions ..	31	Seals ..	27
Armadillos ..	93	Eagles ..	56, 77	Lizards ..	64-69	Secretary Bird ..	45
Asses ..	107, 108	Eclectus ..	100	Llamas ..	43	Seriema ..	45
Aviaries, 4, 12, 42, 44, 54, 73, 77, 84, 88, 102		Edentata ..	92	Lories ..	99	Serow ..	36
Aye-Aye ..	21	Egret ..	42	Lorikeets ..	100	Serpents ..	64, 69, 70
Baboon ..	18	Eland ..	36	Lynx ..	51	Serval ..	50
Badger ..	78	Elephants ..	101	Macaws ..	97	Sheep ..	88, 96, 104
Band ..	77	Emeu ..	26	Mandrill ..	18	Sheldrakes ..	72, 73
Banteng ..	63	Fellows: Admission of	47	Mangabey Monkeys	19	Skink-Lizards ..	68
Barbary Wild Sheep	104	Fellows' Tea Pavilion	47	Manucode ..	37	Skunk ..	54
Barbets ..	38	Finches ..	37	Markhor ..	104	Snails ..	83
Batrachia ..	64-66	Flamingo ..	10	Marmosets ..	21	Spiders ..	84
Bats ..	84	Foxes ..	30, 53	Marsupials ..	74, 82, 83, 90, 91, 94	Spoonbill ..	43
Bears ..	11, 40, 41	Fruit-bats ..	84	Meerkats ..	82	Squirrel Phalanger..	82
Beavers ..	104	Gannet ..	14	"Millions" Fish ..	72	Squirrels ..	74, 82
Birds-of-Paradise ..	37	Gayal ..	63	Mithan ..	63	Starlings ..	7
Bison ..	61	Gazelles ..	35, 110	Monkeys ..	17-21	Stick Insects ..	81
Boas ..	69	Gecko ..	67	Moths ..	83	Storks ..	26
Boatbill ..	76	Geese ..	9, 10, 33	Mud-fish ..	69	Sugar-bird ..	37
Bower-birds ..	4	Genets ..	53	Mungoos ..	83	Swans ..	73
Brush-turkey ..	95	Gibbons ..	24	Muntjac ..	79	Swine ..	14, 15
Buffalo ..	62	Giraffe ..	106	Mynahs ..	7	Takin ..	47, 48
Bustards ..	81	Gnu ..	34	Newts ..	67	Tanagers ..	37
Butterflies ..	83	Goats ..	96, 103	Nylghaie Antelope..	36	Tapirs ..	106
Camels ..	41, 42	Goral ..	36	Ocelot ..	50	Tasmanian Devil ..	78
Cape Hunting-Dog	30	Gulls ..	13	Offices ..	95	Terrapin ..	71
Capuchin Monkey ..	19	Hammerhead ..	46	Oranger ..	108	Thar ..	96
Capybara ..	16	Harpy Eagle ..	56	Orang-Utan ..	23	Thylacine ..	90, 92
Caracal ..	52	Hartebeeste ..	34	Ostrich ..	24	Tigers ..	32
Caracaras ..	55	Heloderm ..	67	Otters ..	48	Toads ..	65
Cardinals ..	7	Heron ..	13	Owls ..	84-86	Tortoises ..	70, 71
Cassowary ..	26	Hippopotamus ..	105	Panda ..	90	Toucan ..	39
Cats ..	50	Hoopoe ..	39	Panther ..	33	Touracous ..	5
Cattle ..	60-64	Hornbills ..	44	Parrakeets ..	93, 100	Tragopan ..	87
Chamaeleons ..	67	Horses ..	107	Parrots ..	96-100	Tree-frog ..	65
Chamois ..	102	Huanaco ..	48	Pelican ..	44	Trumpeters ..	45
Cheetah ..	33	Hyenas ..	39	Penguin ..	28, 29	Turtles ..	70, 71
Chimpanzees ..	22, 23	Hyrax ..	105	Phalanger ..	82	Tyrant-bird ..	7
Choughs ..	88	Ibex ..	103	Pheasants ..	57, 58, 87	Umbre ..	46
Civet Cats ..	53, 77	Ibis ..	42	Photographic Dark- Room ..	30	Vicuna ..	48
Coati ..	92	Ichneumon ..	83	Pigeons ..	6	Vipers ..	75
Cobra ..	70	Iguana ..	68	Polar Bear ..	11	Viscachas ..	15
Cockatoos ..	98	Infirm ..	57	Porcupine ..	16	Vultures ..	55, 56
Cock of the Rock	38	Insects ..	83, 84	Pouched Mice ..	83	Waders ..	73
Conures ..	100	Jackals ..	30, 53	Puff Adders ..	70	Wapiti Deer..	59
Cormorant ..	14	Jaguar ..	33	Puma ..	33	Wart-Hog ..	15
Cougar ..	33	Jerboa ..	82	Pythons ..	69	Water-Buck ..	34
Coyote ..	29	Kagu ..	7	Racoons ..	53	Weaver-birds ..	7
Coypu ..	15	Kangaroos ..	74, 94	Rattlesnakes..	70	Weka Rail ..	24
Cranes ..	79	Kea ..	88	Reptiles ..	64	Wild-dogs ..	30
Crocodiles ..	66	Kiang ..	108	Rhea ..	25	Wolves ..	29
Crows ..	88	Kingfishers ..	5	Rhinoceros ..	101	Wombat ..	88
Curassow ..	46	King Vulture ..	56			Wood-Swallow ..	8
Cuscus ..	82	Kinkajou ..	51, 52			Yak ..	62
		Kites ..	55			Zebras ..	109
		Kiwi ..	26			Zebu ..	62

MADAME TUSSAUD'S

THE NEAREST HOUSE OF ENTERTAINMENT
... TO THE ZOOLOGICAL GARDENS ...

THE MOST INTERESTING,
INEXPENSIVE EXHIBITION

INSTRUCTIVE AND
IN LONDON.



Free Cinematograph Performances throughout the day.
Beautiful Pictures. Delightful Music all day.

Portrait Models of World's Celebrities. Tableaux, Scenes, &c.

MADAME TUSSAUD'S

Perfectly Happy

because perfectly fed—on Mellin's.

Mixed as directed and given as a regular diet to *your* baby from birth, Mellin's will build up the little one's constitution, strengthening bone and muscle. It has done so in thousands of cases already.

Mellin's Food



is the finest substitute for natural breast-milk. Doctors not only recommend it, but give it to their own children. Free Sample for 2d. postage. Also valuable Handbook for Mothers, 2d. extra postage. Mention this book. Address Sample Dep.

MELLIN'S FOOD, Ltd.,
Pekham, London,
S.E.

